Kay Gallagher *Editor*

Education in the United Arab Emirates

Innovation and Transformation

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Preface

This edited volume aims to provide a scholarly overview of contemporary education in the United Arab Emirates (UAE). There is considerable global interest in education in the UAE today; however, comprehensive sources of information and analysis are few. As a result of the transformations that have occurred in education in the UAE in recent decades, thousands of international educators arrive in the country annually to work in this young, innovative educational hub. Yet they often have little understanding of the education system in which they find themselves. This book fills that gap and provides a baseline point of reference on the main sectors of education in the UAE for teachers and professors, for educational researchers, administrators, leaders and policy-makers alike, and for national and international students of education at undergraduate and graduate levels.

The book aims to synthesize insights from policy, practice, and research to offer an informed and reliable analysis of UAE education across multiple domains by academics and practitioners who are active in their respective fields. The chapters that constitute this volume were all written during the *Year of Zayed* (2018), a national initiative to honor the legacy of the nation's late founder, Sheikh Zayed bin Sultan Al Nahyan, a legacy which has human development at its core.

Although there is an increasing body of educational research emanating from this emerging education nexus, there has been no reliable overview of contemporary, sector-by-sector education in the UAE available until now. Containing chapters by content experts who have extensive first-hand practical experience of developments within the various educational domains, this edited volume provides a baseline account and scholarly overview of the historical and innovative developments in this transformed educational landscape.

Moreover, most of the research in education in the UAE to date is small-scale, and independent, large-scale educational research is rare. An achievement of this volume is to draw together the extant body of research around each sector. Because educational research in the country is at a relatively early stage, and while progress is rapid, the reader will notice that sources such as newspaper articles, laws, press releases, websites, reports, and policy documents, play an important role in this volume. Another achievement of this edited volume is to gather together an often

fragmented and disjointed body of evidence into one place. Moreover, in this rapidly evolving educational context, where new initiatives are proposed, new policies are enacted, new agencies are formed, and existing agencies are repurposed on a frequent basis, the volume presents a panoramic snapshot of the state of contemporary education.

The opening chapter of this book sets out the major factors of context that impact on all facets of education in the UAE, and introduces key themes that recur throughout the book. This is followed by chapters on early childhood education, K–12 education, and higher education. Chapters on Arabic language education, STEM education, and English language education follow. Teacher education and special needs education are then addressed, and the book closes with an examination of quality assurance in education. To provide consistency for the reader, within each chapter there is a brief historical overview of the development of the sector, while the primary focus is on examining contemporary innovations and transformations. Trends and future directions are explored, drawing upon local, regional, and international research, and examples of current practice, policy, and approaches in the sector are provided.

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Editor and Contributors

About the Editor

Kay Gallagher is an Associate Professor and Associate Dean in the College of Education at Zayed University in Abu Dhabi. She has worked in Higher Education in the UAE since the mid-1990s, and was formerly Chair of the Education Department at Abu Dhabi Women's College, and later was Head of Education Studies at Emirates College for Advanced Education. She coordinated a Master's in Education program at the University of Hong Kong, and was a school principal in Ireland. Her research interests include language-in-education, teacher education and teacher professional development, second language and literacy acquisition, and classroom-based practitioner research.

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Abbreviations

ACTVET	Abu Dhabi Centre for Technical and Vocational Education and Training
ADEC	Abu Dhabi Education Council (2005–2017)
ADEK	Abu Dhabi Department of Education and Knowledge (2017 onwards)
AUD	American University of Dubai
AUS	American University of Sharjah
BUiD	British University in Dubai
CAA	Commission for Academic Accreditation
DSC	Dubai Statistics Center
DSIB	Dubai School Inspection Bureau
DWE	Dubai Women's Establishment
ECAE	Emirates College for Advanced Education
ECE	Early Childhood Education
ECCE	Early Childhood Care and Education
ECEI	Early Childhood Education Institution
EMSA	External Measurement of Student Achievement (UAE school test)
GCC	Gulf Cooperation Council
HCT	Higher Colleges of Technology
IEP	Individualized Education Program
K–12	Kindergarten to Grade 12 (Age 4–17 years)
KHDA	Knowledge and Human Development Authority (Dubai)
LSA	Learning Support Assistant
MOE	Ministry of Education
MOSA	Ministry of Social Affairs
MSA	Modern Standard Arabic
NAEYC	National Association for the Education of Young Children
OECD	Organization for Economic Cooperation and Development
PIRLS	Progress in International Reading Literacy Study
PISA	Program for International Student Assessment
SCAD	Statistics Center, Abu Dhabi

SEND	Special Educational Needs and Disabilities
STEM	Science, Technology, Engineering and Mathematics
TELS	Teacher and Educational Licensure System
TIMSS	Trends in International Mathematics and Science Study
UAE	United Arab Emirates
UAEU	United Arab Emirates University (Al Ain)
UNCRPD	United Nations Convention on the Rights of Persons with Disabilities
UNDP	United Nations Development Program
ZU	Zayed University (Abu Dhabi and Dubai)

Chapter 1
Introduction: Education in the UAE—Context and Themes

Kay Gallagher

Abstract This introductory chapter provides an overview of education in the United Arab Emirates (UAE). It also acts as a preview for the analyses of the various education sectors in the chapters that follow: Early Childhood Education, K–12 Education, Higher Education, Arabic Language Education, STEM Education, English Language Education, Teacher Education, Special Education, and Quality Assurance in Education. The two distinct stages in the country's educational development thus far are outlined here: the initial establishment and expansion of the education system, followed by the current focus on improving its quality. The structure and funding of the UAE's contemporary education system is described, and the significance of innovation and transformation is discussed. Salient primary themes in contemporary education that recur throughout the subsequent chapters of the book are set out, including the impact of the country's demographics on education, the relative roles of national citizens and resident non-citizens in education, the differences in regional provision for education within the country, and the contrast between public and private schooling.

Introduction

The United Arab Emirates (UAE) was founded in 1971, when the seven sheikhdoms of Abu Dhabi, Dubai, Fujairah, Ras Al Khaimah, Sharjah, Umm al Quwain and Ajman were united under a federal agreement, with Abu Dhabi as the capital city. One of the youngest nations in the Middle East, remarkable progress has been made since the country's humble educational origins in palm frond huts in the early twentieth century. At that time, schooling was informal and mostly for boys, and the teacher was an imam attached to the local mosque, compared to the present day where the UAE contains the highest number of English-medium international schools in the world (Warner & Burton, 2017). The country's first university was only established in

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1976; yet today international branch campuses of prestigious universities proliferate, including the flagship institutions of New York University and Sorbonne University.

To illustrate the rapid educational progress that has been made, at the establishment of the Federation of the UAE in the 1970s, 48% of adults in the UAE were illiterate but 40 years later over 93% were literate (Crown Prince Court, 2011). By 2018, less than 1% of the population was illiterate (Government.ae, 2018a). In the years between 1973 and 2009, to take another example, secondary school enrolment rose from 22 to 93%, while tertiary education enrolment rose from a little over 1% in 1979 to over 30% in 2009 (Crown Prince Court, 2011). Today, the UAE outstrips its neighbours in many spheres of education, and regularly outperforms others in the region in the international education league tables. In a recent international test of reading proficiency, for example, students in the UAE achieved the highest score of all Arab countries (Progress in International Reading Literacy Study [PIRLS], 2016). On the other hand, however, when international comparisons are made, the UAE has not yet reached the international average in tests of student achievement. It is clear that much has been achieved, but much still needs to be done.

So as to prepare the reader for the narrative threads that run through this volume, in this introductory chapter several factors of context which echo throughout the chapters of this volume are introduced. These factors of context include the country's unique demographics, the drive towards Emiratization in education, the divergence between public and private schooling, and the differing educational emphases internally within the regions of the UAE. First, however, the structure of the UAE's education system is briefly set out, as well as its expenditure on education, followed by a discussion of innovation and transformation in education in the UAE in general.

It is not possible to begin to discuss contemporary education without a preliminary overview of the emergence of the UAE as a nation. The evolution of the sheikhdoms of the Arabian Gulf from undeveloped backwaters into some of the world's wealthiest economies has been dubbed one of the history's ironies (Davidson, 2005). The UAE has become one of the best known of the Arabian Gulf states, due to the global reach of its main cities of Abu Dhabi and Dubai, which have risen to global prominence in international sectors such as aviation and tourism. In the less than 50 years since its foundation in 1971, the UAE has undergone, and continues to undergo, a profound transformation into an outward-looking, wealthy, urban country. The oil and gas wealth of the capital, Abu Dhabi, has given the country one of the highest per capita income levels in the world, and has provided the means to invest heavily in physical as well as in socioeconomic and human development infrastructure.

Two Phases of Development

Undoubtedly, until recently the education system lagged behind developments in other sectors. In fact, not very long ago it was still possible to state, as Godwin (2006, p. 5) did, that 'Education in the UAE has remained unchanged … since

Federation'. However, since 2010, the transformation of the education system has been gathering speed and substance.

The development of education in the UAE since its formation can be divided into two distinct phases: the first phase was one of quantitative expansion, and was followed by the current phase of qualitative transformation. The initial expansion phase ran from the 1970s until around the end of the 1990s, and witnessed tremendous growth in the numbers of students, teachers and schools. The second phase, that of qualitative improvements, has focused on root and branch reformation of the public school system, on the development of a dynamic private school system, and on the expansion and improvement of tertiary education. This second phase is the primary focus of this book.

The initial attempt to transform the quality of education was ushered in by the government's *Vision 2020* for education, when Mawgood, a senior advisor to the Minister of Education at the end of the 1990s, declared that 'Educational reform should focus on qualitative as well as quantitative factors' (Mawgood, 1999, p. 17). While acknowledging that achievements during the first phase of educational expansion had been significant, it had become clear, in his words, that 'problems of waste, inefficiency and low productivity [are] deep seated' (Mawgood, 1999, p. 8). He believed that 'A patch-up or piecemeal approach or strategy will not be enough. What is required is a transformation of the education system in the UAE …' (Mawgood, 1999, p. 6). This realisation arose as the country began to position itself as a global player in the knowledge-based economy, and began to think the unthinkable: a future post-oil era. Yet poor results in standardised tests of achievement (in both national tests, such as CEPA,[1] and international tests, such as IELTS[2] and TIMSS[3]) brought to public attention what had earlier been noted only by researchers and external consultants. Over a decade after the launch of Vision 2020, and believing that the promised educational reforms had been slow to gather traction, Abu Dhabi Education Council—the capital city's local education authority at that time—saw the need to set out its own 'long-arching strategy to achieve dramatic quality improvements' in education (ADEC, 2012).

[1]The *Common Educational Proficiency Assessment* (CEPA) consisted of two standardised national tests, an English test and a Math test. School leavers had to sit the English test if they wished to study at a federal tertiary institution in the UAE, while some tertiary institutions required the Math test also. CEPA was replaced by another standardised national test, EMSAT, in 2016.

[2]The *International English Language Test* (IELTS) is a standardised international skills-based test of English language proficiency. Test takers from the UAE consistently score amongst the lowest out of 40 countries worldwide, with an overall score of 4.9 reported in the academic English module for 2017 (IELTS, nd).

[3]The *Trends in International Math and Science Study* test (TIMSS) is a standardised international test of student achievement in Math and Science, conducted every 4 years. Test takers of Mathematics in the UAE perform better than most Arab countries, but are still below the global average (Mullis, Martin, Foy, & Hooper, 2016).

Table 1.1 Age range across education sectors (*Source* Government.ae, 2018b)

Sector	Age range
Early childhood education	Birth–4 years
Kindergarten 1 and 2	4–5 years
Cycle 1	6–11 years
Cycle 2	12–14 years
Cycle 3	15–17 years (encompasses traditional secondary as well as technical/vocational schools)
University/college	17+ years

Structure and Funding

Before moving on to discuss the role of innovation and transformation in education in the UAE, an overview of the structure of the education system is provided in Table 1.1 above. (The information presented shows the age and grade structure as published by the Ministry of Education in 2018.) Following the table, a brief summary of the UAE government's budgetary funding for education is provided.

Regarding government funding for education, according to a 2017 report from the International Monetary Fund (IMF), government spending on education is 1.6% of GDP (Bibolov, Cakir, Garcia, Martinez, & Tamirisa, 2017). As the report acknowledges, on the face of it, this is low relative to the OECD average of 4.5%. However, the UAE has a very high proportion of fee-paying private schools, and when this factor is combined with the relatively small percentage of school-goers in the population, expenditure on state-provided education becomes significantly in excess of other countries, according to this report. In fact, the IMF report notes that expenditure on public education is greater than in the OECD countries with the highest levels of public education spending (Norway, Denmark, Finland). In the UAE, it exceeds $22,000 per capita, more than double the average in the OECD (Bibolov et al., 2017). Moreover, there is substantial indirect spending on education through the significant school fee allowances that are paid annually to many employees, especially to those who work in the vast government sector. Another complicating factor is that there is substantial official spending on education at the emirate level, in addition to centralised federal-level spending, with the emirates of Abu Dhabi and Dubai in particular providing major funding for local education initiatives.

The burgeoning fee-paying school sector in the UAE was valued at $4.4 billion in 2017 (Hoteit, El Hachem, Erker & Farah, 2018), and has been forecast to almost double to $7.1 billion by 2023 (Hoteit et al., 2018). The government is supportive of private education, and Emirati national citizens—the segment of the population who have traditionally attended state schools—have been urged to consider attending private schools (Arabian Business, 2017). If nationals abandon state schools for private schools, it will result in the further shrinking, and even demise, of the state school system in Dubai. Caution about the dominance of private education in the

country has been voiced in some quarters, however, with a warning that 'The dominance of for-profit providers has meant that financial returns, rather than a belief in the importance of education for both the individual and society, begin to influence discourse in the education sector overall' (Ridge, Shami, & Kippels, 2016, p. 56).

As the number of fee-paying private schools has risen, federal government spending on education appears to be falling, according to varied sources. For 2017, the federal budget provision for education was reported at 20.5% of the total federal budget (Ministry of Finance, 2016). By 2018, the education budget was reported at 20% (Salama, 2017). For 2019, however, the education budget was reported at 17% of the overall federal budget (Zacharias & Saadi, 2018).

Government schools are free for Emirati citizens who comprise the vast majority of students in state schools. In the state K–12 sector, according to the Abu Dhabi Department of Knowledge, the local education authority based in the capital city, non-nationals who are 'distinguished' ('A' grade in Arabic, English and Mathematics) may be enrolled as fee-paying students in public schools in Abu Dhabi, provided they comprise no more than 20% of the total number of students in the class (ADEK, 2018). Only Emirati nationals are eligible to attend state-funded Kindergartens.

In Higher Education also, there has been 'an enormous domestic public investment' in private education through government support for international branch campuses. Although, as Fox and Al Shamisi (2014) note, 'there is no national plan or coordinated strategy as such to develop the UAE as an education hub' (p. 67), Abu Dhabi hosts and fully subsidises some world class higher education branch campuses, including New York University and the Sorbonne. In Dubai, international branch campuses abound, but are not so heavily subsidised (Knight, 2014), as operating costs are not subsidised by the Dubai government, unlike in Abu Dhabi.

Innovation

The discussion next turns an examination of the meaning of innovation and transformation, and the significance of these in the discourse around education in the UAE. *Innovation* can be defined as 'A change made in the nature or fashion of anything; something newly introduced; a novel practice, method, etc.' (Oxford English Dictionary, 2018). Innovation implies alternative, fresh solutions to outstanding challenges in a particular situation. It is context-specific. Innovation may lie in the way in which something is being implemented and with whom, and does not necessarily imply novelty nor even something new (Paniagua & Istance, 2018). For the UAE's leaders, education is viewed as a key driver of innovation. Innovation in education is required to ensure continued economic prosperity for the country in the post-oil, knowledge-based era; an era which will require innovative minds and innovative actions. The UAE's Minister of Education has positioned education as the vehicle by which to catapult the country into the knowledge economy, stating clearly that 'We want to move from an economy based on oil to a new economy based on human knowledge' (Ministry of Education, 2017a).

As the UAE prepares for the post-oil and gas era, when its abundant indigenous natural resources will have dwindled or become increasingly redundant due to a global switch to cleaner and sustainable forms of energy, there is a growing recognition that the country's indigenous human intellectual resources will become its most valuable asset. Accordingly, there is a concerted effort underway to build a knowledge-based economy for the post-fossil fuel era. In order to achieve this, a well-educated population is essential, and consequently education in the UAE has been elevated to a much higher national priority than in the past.

The UAE's most recent vision for education is described as 'innovative education for a knowledge, pioneering, and global society' (Ministry of Education, 2018a). This vision was prefaced almost 20 years previously when it was proposed that 'the concept of school curriculum must be fundamentally changed from a teacher-centred … to a student centered … approach' (Mawgood, 1999, p. 8). Moreover, it was announced at that time that 'There will be a shift emphasis (sic) in methods and practices in education—a move from teacher to students, teaching to learning, and from memorisation to student-centred learning and thinking' (Mawgood, 1999, p. 22). This was a clear statement of innovative intent.

Some years later, a national innovation strategy was launched in 2014, in which education was highlighted as a key sector for innovation (government.ae, 2018c). Each government entity, federal universities included, is required to have a 'CEO of Innovation'. Allied with this, there is an emphasis on innovation as a key pillar of the government's current strategic plan, entitled *United in Knowledge* (Vision, 2021) which focuses on the development of knowledgeable and innovative Emirati citizens through education.

Transformation

Where innovation involves doing things differently, *transformation,* on the other hand, involves 'a marked change in form, nature, or appearance' (Oxford English Dictionary, 2018). Indeed, commentators tend to describe the recent transformation of education in the UAE in hyperbolic terms. Echoing the language used around the sociopolitical uprisings that occurred in several countries in the region at the start of the new millennium, a UAE national newspaper termed the profound changes in education to be no less than a *revolution:* 'UAE cabinet announces education revolution', it reported (Croucher & Salem, 2013). Meanwhile, the capital city's school reform agenda was described as follows: 'For Abu Dhabi, education reform is intended as a *transformation plan and movement*, attempting to bring about a systematic change in educational practice at the level of basic education in the society' (Badri & Al Khaili, 2014, p. 202; emphasis added).

This dramatic language used around schooling extends into discussions of higher education. For example, in describing the burgeoning number of international branch campuses in the UAE in an article in the *New York Times*, Lewin (2008) dubbed it an education gold rush. Meanwhile, the transformations in education occurring

in the Gulf region in general were described as 'unprecedented in the history of civilisation in terms of scale or speed' (Bashur, 2010, p. 253). While such sentiments may tend towards exaggeration, they are indicative of observers' astonishment at the 'unparalleled growth of education provision from early childhood to the tertiary level' (Warner and Burton, 2017, p. 17).

The country's leaders have now made education a top agenda item. Not only is a high-quality system of education essential for the country's economic future, it is also essential for the 'security and the maintenance of the strategic equilibrium' of the Gulf countries, according to (Mawgood, 1999, p. 11). In addition to investing significant governmental spending in education, rulers also invest considerable personal interest in education. At the start of the new school year in September 2018, for example, the country's leaders used Twitter to exhort school students to success, while the country's Crown Prince sat alongside students in a state school classroom in Abu Dhabi on the first day of the new school year, and urged national students that the goal was no longer to 'pass only—but to excel and make it to the top' (Dajani, 2018).

Factors of Context

A number of country-specific factors impact on education in the UAE, factors which recur throughout the chapters in this volume. These factors include the country's demographics, the phenomenon of Emiratization, regional differences in educational provision, and the roles of public and private schooling. The discussion now turns to an examination of these factors one by one.

Demographics

First, the country's demographics are unique, in terms of the ratio of citizens to resident non-citizens, and this impacts on education as it does on all facets of life in the UAE. Expatriates are not entitled to citizenship, and for the most part are not eligible for long-term residential status. In the capital of Abu Dhabi in 2016, Emirati national citizens comprised just 19% of the population, with over 80% of the population being expatriate residents (Statistics Center of Abu Dhabi, 2017a). This imbalance is even greater in the country's commercial capital of Dubai: over 90% of Dubai residents are expatriates, with less than 10% of the population being Emirati nationals (Dubai Statistics Center, 2017).

Such demographics are relevant to any discussion of education in many ways. Free, state-provided schooling and tertiary education are generally only available to Emirati citizens. Non-citizens are generally not accepted into state-funded educational institutions, and must pay for their education privately. As a result, public schools are almost exclusively attended by Emirati nationals, and follow the UAE Ministry of Education's curriculum. Private schools, although they include many

Emirati students, are primarily comprised of expatriate residents. Not surprisingly, given the country's imbalanced demographics, private schools have mushroomed in order to cater for the more than two hundred expatriate nationalities who live in the UAE (Government.ae), offering an array of curricula (and oftentimes several curricular track options are offered within a school), including American, Australian, British, Canadian, French, German, Indian, Pakistani, and international hybrids of these. Thus the chapters in this volume regularly refer to 'government', 'public', 'state' or 'federal' provision for education on the one hand, and to 'private', 'international' and 'for-profit education' on the other.

Another aspect of the country's unusual demographics is the extensive involvement of external expertise in the development of the education system. For example, the first federal university in the country, United Arab Emirates University (UAEU), was established with the assistance of Egyptian consultants in 1973. By 1988, when the Higher Colleges of Technology system (HCT) was established, the UAE had turned to Canada for expertise. Later, upon the establishment of Zayed University in 1998, consultants were employed from the USA. According to AlAli (2014), under the influence of world polity, the UAE made a transformational shift at the end of the 1980s in its federal higher education model by replacing its original Arabic-based, Egyptian model with an English-American curricular model. Yet on the other hand, when Emirates College for Advanced Education (the country's first Teachers' College) was established in 2007, expertise was sought at that time from the East, and Singapore's National Institute of Education was invited to help set up the new college. These examples serve to illustrate the openness of the UAE to external influences and its eagerness to embrace international standards in education.

Emiratization

Related to the preceding discussion of demographics is the phenomenon of Emiratization, an ongoing campaign to prioritise the employment of Emirati national citizens where possible. In the realm of education, the imbalanced demographics are problematic, and it was noted some years ago that 'the fundamental goal of Emiratization is to assure continued social coherence in the face of an overwhelming influx of foreign participants from other cultures. This is best achieved through a public school system staffed by well-qualified UAE national teachers' (Mawgood, 1999, p. 16). Clearly, an important function of any state school system around the world is cultural transmission. However, in the UAE, during the ongoing years of nation-building, and because of the imbalance in population between expatriates and nationals, cultural identity factors assume an even greater importance. In 1999, less than 30% of teachers in state schools were Emirati (Mawgood, 1999, p. 16). By 2017, the rate had risen to just 36% in state schools, but only 0.3% of teachers in private schools were national citizens (Statistics Center of Abu Dhabi, 2017b). Issues around in-country teacher education, challenges in the recruitment of teachers from

outside the country, and efforts to raise teacher quality are another theme that runs throughout this volume.

Regional Differences

In many ways, as the chapters in this book reveal, the story of education in the UAE—despite the amalgamation of two public education authorities in 2017[4]—is a tale of two cities, and indeed a tale of two systems: the public and the private. In Dubai, private schools outnumber public schools by a ratio of two to one, while in the lesser known northern emirates of Ras Al Khaimah, Fujairah, Sharjah, Ajman and Um Al Quwain, there are more public than private schools. On the other hand, in Abu Dhabi, private schools just narrowly outnumber public schools. Since the establishment in 2005 of a new education authority for Abu Dhabi, Abu Dhabi Education Council (ADEC), until its restructuring as the Department of Education and Knowledge (ADEK) in 2017, the city and emirate of Abu Dhabi poured huge funding and sustained effort into reengineering its public school system. The city state of Dubai, on the other hand, has led the way in the development and regulation of private schooling in the past decade, as discussed below.

Public and Private

Continuing the discussion on the differing emphases between Abu Dhabi and Dubai, a brief examination of the relative roles of public and private education in the UAE is warranted here. In the World Bank's seminal report on the need for educational reform in the Middle East, *The Road not Travelled* (Galal et al., 2008), a key role was identified for private schooling in raising educational standards. So rapidly did the private school sector expand in Dubai that in 2006 the government created a special entity to oversee it, the *Knowledge and Human Development Authority* (KHDA). The KHDA projected a 7% increase in the demand for high-quality schools between 2014 and 2019, according to a report in a Middle East economics magazine (James, 2014). Interestingly, the proportion of Emirati students enrolled in private schools increased from 34 to 57% between 2004 and 2014 (Thacker & Cuadra, 2014), and by 2017, 73% of the country's school-going population attended private schools, with only 27% attending state schools, according to an IMF report (Bibolov et al., 2017). There were 567 private schools in the country by 2016–2017 (Warner & Burton, 2017). Thacker and Cuadra (2014, p. 5) labelled the preponderance of private schools in

[4]In 2017, Abu Dhabi Education Council (ADEC) which was initially established in 2005 as a breakaway entity from the Dubai-based UAE Ministry of Education (MOE), and which spearheaded the reformation of state schooling in Abu Dhabi for more than a decade, was disbanded and re-amalgamated as a department of MOE.

Dubai as 'both unique and extreme'. In order to regulate this mushrooming sector, Dubai Schools Inspection Bureau (DSIB) was established in 2007 to oversee the quality of private schooling in Dubai, and in so doing brought 'a new focus on the importance of education quality … which did not exist before' (Thacker & Cuadra, 2014, p. 34). Within a decade, the quality of student learning as well as student well-being had been markedly improved, as evidenced in a retrospective summary report on the transformations in private schooling in Dubai during the years 2007–2017 (KHDA, 2018).

Indeed, many innovative educational approaches are emerging from the burgeoning international private school sector in Dubai. For example, one of the world's largest private school providers is GEMS (Global Education Management Systems), which originated in Dubai (Sharif, 2013). GEMS declares that it educates one-quarter of all students in Dubai and employs 9000 educators from more than 115 countries in its 48 schools across the UAE (GEMS Education, 2018). While the GEMS Education conglomerate runs a for-profit business model, it also supports teacher education in the developing world through its philanthropic arm (Verger, Lubienski, & Steiner-Khamsi, 2016). Meanwhile, its high profile, million dollar annual *Global Teacher Award* is made to one teacher each year. The award intends to celebrate 'the impact that teachers have on the world around them—not only on their students, but on the communities around them' (Varkey Foundation, 2018).

Moreover, at the level of higher education, the UAE has become globally prominent in attracting and heavily subsidising international branch campuses of prestigious universities, including France's Sorbonne University and New York University in Abu Dhabi. Meanwhile, in 2003 Dubai created a free zone for international branch campuses as well as for private local universities, dubbed 'Knowledge Village', and multiple higher education providers have established campuses there.

The National Agenda for Education

Education in developed countries nowadays is juxtaposed between the local and the global, the traditional and modern, the indigenous and the imported. But perhaps more so than other locations, education in the UAE reflects the contemporary globalisation and neoliberalisation of education, evident in the proliferation of international private schools and of private higher education. Moreover, public education in the UAE is conducted within a climate of rapid development and frequent change. Despite being among the top-performing school systems in the Arab world, and despite governmental spending on education that exceeds OECD averages (Bibolov et al., 2017), learning outcomes are still lower than OECD averages. With regard to student achievement scores in the *Program for International Student Assessment* (PISA), for instance, it has been observed that

> The considerable resources devoted to education have not yet translated into strong outcomes … over 40 percent of students are at or below level 2—a proficiency level deemed by the OECD as necessary to participate fully in a globalised world. (Bibolov et al., 2017 p. 17)

This level of performance is problematic in light of the UAE's aspiration to develop 'a world class education system that supports all learners in reaching their full potential to compete in the global market' (ADEC, 2010).

Despite the challenges, the UAE's National Agenda which was launched in 2014 aims squarely for a 'first-rate education system' (Vision 2021). This government-led agenda contains eight ambitious performance indicators for the education system:

1. To be among the top 20 countries in the Program of International Student Assessment (PISA) test.
2. To be among the top 15 countries in the International Mathematics and Science Study (TIMSS).
3. To ensure that all schools (public and private) in the UAE have high-quality teachers.
4. To ensure that all schools (public and private) have highly effective leadership.
5. To ensure that 90 percent of students in the ninth grade of public and private schools have a proficiency in Arabic.
6. To increase the high school graduation rate to 98% among Emirati students.
7. To provide early years education to 95% of children between age 4 and 5 through public and private preschool provision.
8. To eliminate the need for Emirati students to complete a foundation program to qualify them for university entry
(Adapted from Warner & Burton, 2017).

With regard to the first of the national targets for education as set out above, the Organization for Economic Cooperation's (OECD) PISA test (*Program for International Student Assessment*) is conducted internationally every 3 years, and tests middle school students' achievement in Reading, Math and Science. The UAE first participated in 2009 and aims to be among the top 20 countries internationally in the PISA test by 2021. To give an indication of the magnitude of this ambition, in the 2012 round of testing, school students in the UAE ranked 44th internationally in Science, 48th in Math and 46th in Reading. By 2015, the country's students had moved up the international PISA league tables considerably, being ranked at 35th in Science, 37th in Math and 34th in Reading. With the results of the 2018 testing cycle due in April/May 2019, time will tell if the UAE's ambitious targets will be fulfilled. There is no doubting the scale of the country's ambition, however. In its online information brochure on PISA, from which the above data were sourced, the Ministry of Education includes a poignant quotation from the Prime Minister, Sheikh Mohammed bin Rashid Al Maktoum, the Vice President and Prime Minister of the United Arab Emirates and ruler of the Emirate of Dubai, which asserts that 'It is our right to dream that our country will be one of the best countries in the world' (Ministry of Education, 2018b).

The second of the above-listed aims for education in the UAE is to be among the word's top 15 countries by 2021 in Math and Science performance in the IEA's (International Associations for the Evaluation of Educational Achievement) *International Trends in Mathematics and Science Study* (TIMSS). This test is conducted every 4 years in over 50 countries, and evaluates the performance of students in Math

and Science at Grades 4 and 8. The UAE is already performing at the top level in the Arab world in the TIMSS as well as the PISA tests; however, results from the 2015 international test show that the UAE will need to climb up the international rankings by 20 positions at Grade 4 and by over 6 positions at Grade 8, if the aspiration to be among the world's top 15 countries in Math and Science performance in TIMSS by 2021 is to be achieved (Ministry of Education, 2017b).

Dubai's authority for private schools, the *Knowledge and Human Development Authority* (KHDA), has highlighted the impact of these international tests on the educational landscape of the UAE in noting that 'Both TIMMS and PISA have changed in the UAE, from being international assessments only, to becoming part of our national priorities' (KHDA, 2017, p. 3). Meanwhile, in Abu Dhabi, the impact of these international tests is felt within curricular assignments undertaken by students: the Abu Dhabi Department of Education and Knowledge (ADEK) requires all students who are due to take the TIMMS test to answer a 'question a day' in Math and Science on an app over a period of several weeks in preparation for the test and also to sit for a mock test, so as to boost scores (National, 2018).

Conclusion

Looking ahead to the body of this book, a carefully curated set of chapters follows, written by subject experts who have not only studied, researched and published in their respective educational sectors, but have had several years of experience in the enactment and leadership of practice within their field in the UAE. There are authoritative chapters on Early Childhood Education, K–12 Education, Higher Education, Arabic Language Education, STEM Education, English Language Education, Teacher Education, Special Education, and Quality Assurance in Education, which together provide a panoramic snapshot of the state of contemporary education in the UAE. An overview of each chapter follows.

Early Childhood Education

Amidst growing recognition of the importance of a robust and holistic early learning environment, **Anna Dillon** examines the current role and status of early childhood education in her chapter entitled **Innovation and Transformation in Early Childhood Education in the UAE**. She discusses the provision of early childhood care and education for the age group birth to 4, and then for the age group 4 to 6. While much progress has been made to transform education for the latter age group, the provision for the earlier age range remains limited, and there is no national curricular framework for those under the age of four. The development of such a curriculum is seen to be of critical importance in realising the vision of the UAE.

School Education

In this seminal chapter, ***The Growth and Transformation of K–12 Education in the United Arab Emirates***, authors **Susan Kippels** and **Natasha Ridge** provide an insightful and comprehensive overview of school-level education in the UAE from Kindergarten to Grade 12, in its historical and contemporary manifestations. Areas of recent innovation in schools are addressed, including the expansion of technical and vocational education, and efforts to foster student well-being. Focusing primarily on the state school sector, recommendations for further development are made on a number of fronts, including efforts to attract national males into teaching in state schools, the diversification of the national curriculum, the improvement of communication among key stakeholders, and the need for research-based decision-making and collaboration with partners in education.

Higher Education

The expansion of the higher education sector has been dramatic in the contemporary UAE. **Fatima Badry** in her chapter, ***Expanding the Horizon of UAE Higher Education: Path towards a Sustainable Future***, traces its development and examines the sustainability of higher education in the UAE. Her chapter situates the pressures and tensions in the UAE's current higher education system within the context of global issues in higher education. A broadening of curriculum is proposed in order to avoid a reductionist discourse on higher education as merely the producer of human resources for the economy. In addition, a proactive approach is recommended to attracting international students to the UAE, if its potential as a hub of globalised higher education is to be realised.

Arabic Language Education

Hanada Taha Thomure's chapter on Arabic language education, entitled ***Arabic Language Education in the UAE: Choosing the Right Drivers***, has a special place in this volume. The first language of the UAE, the mother tongue of the native Emirati children who attend the state school sector, and the first language of the hundreds of thousands of expatriate Arab children in the private school system, it is also a mandatory subject of study for every child in the UAE school system, whether in public or private education. This chapter discusses the many laudable innovative projects that have occurred in recent years to promote the development of the Arabic language in the UAE. On the other hand, teacher education and school leadership training are identified as areas in need of urgent attention, if such initiatives are to have lasting impact on Arabic language learning outcomes.

STEM Education

Authors **Martina Dickson, Patricia Fidalgo** and **Dean Cairns** address STEM education in the UAE, with a particular focus on the emirate of Abu Dhabi. As indicated by their chapter title, ***The 'S' and 'T' in STEM: Integrating Science and Technology in Education in the UAE***, this chapter focuses primarily on two of the four STEM subjects, Science and Technology, and on the curricular integration of STEM. The chapter examines the research on attitudes towards the use and integration of educational technology in schools and higher education institutions in the UAE, and provides several country-specific examples of good curricular and pedagogical practice. The chapter ties the development of national competencies in science and technology to the future knowledge-based economy when the oil era has passed.

English Language Education

Melanie Taylor Gobert provides a thorough description of the role and functioning of English language in education in the UAE. In her chapter, ***Transformation in English Language Education in the United Arab Emirates***, she explores the role of English in education as the primary second language of the UAE, and traces the history and development of English language provision in public schools and in foundation programs in higher education. The chapter examines the implications of the results of benchmark tests for the standard of English in state education in the UAE. Her chapter also discusses the acquisition of English as a second language in private English-medium schools with international curricula, where learners are immersed in the target language.

Teacher Education

Volume editor **Kay Gallagher** examines the current state of teacher education in her chapter entitled ***Challenges and Opportunities in Sourcing, Preparing and Developing a Teaching Force for the UAE***. Teacher Education is a multifaceted enterprise, and this chapter encompasses teacher candidate selection and preparation, novice teacher induction, teacher recruitment, professional development, and advanced qualifications. In the early years following the country's establishment in 1971, teachers were sourced from across the Arab world, before the establishment of in-country preparation programs for national teachers. In more recent years, the UAE has recruited teachers from high-performing school systems in the Anglophone world. Areas identified for future development in the field of teacher education include Arabic language teacher preparation, teacher professional development for

the upcoming new teacher licensure requirements and induction programs to support the retention of novice national teachers.

Learners with Special Needs and Disabilities

When the UAE government signed the UN *Convention on the Rights of People with Disabilities* in 2006, which guarantees equal educational rights to those with special needs, the country's education system had to rethink its provision for learners with special educational needs and disabilities, known in the UAE as *People of Determination*. In her compelling chapter, ***Learners with Special Needs and Disabilities in the UAE: Reform and Innovation***, author Eman Gaad charts the steady steps the country has taken towards inclusive education, and the progress made in meeting the needs of learners with special educational needs and disabilities in schools and universities. Recent ground-breaking projects that have transformed practice and perceptions in this field across the country are examined.

Quality Assurance in Education

Given that this volume focuses on transformations in the quality of education in the UAE across its key domains, it is fitting that the book concludes with a chapter on quality assurance in education. Authors **Rana Tamim** and **Linda Colburn** examine the growth and current state of quality assurance in education in their chapter, ***In Quest of Educational Quality in the UAE***. The prominence of quality assurance and accreditation is the result of government expectations of value for its significant investment in education, and is also indicative of the competition in the private school and higher education marketplaces that characterises the contemporary UAE educational environment. Moreover, quality assurance and accreditation are seen as essential components in the country's determination to create national and global recognition for its higher education system in particular.

Concluding Remarks

The intention of this book is to provide baseline information on the state of education in the UAE across key sectors. Given the short timespan since the formation of the country, and the fact that there was little or no pre-existing educational system for the young nation to inherit, progress has been remarkable. This volume aims to provide in-depth knowledge of the contemporary context of education, for without such knowledge, integrated and sustainable educational development will be hampered.

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Chapter 2
Innovation and Transformation in Early Childhood Education in the UAE

Anna Dillon

Abstract This chapter explores the development of Early Childhood Education in the UAE, focusing on the period between birth and compulsory school age. A distinction is made between Early Childhood Care and Education, focusing on the age group birth to four and Early Childhood Education, focusing on the age group four to six. The contexts of public and private education are explored across the age range, including in-home care, public nurseries, federal nurseries, public kindergartens and kindergarten provision in private schools. Investments in early childhood give children enhanced opportunities for success later in life. Progress has been made in the UAE for the age range four to six years in terms of enhancing quality through rigorous inspection frameworks based on international best practice, as well as in terms of curriculum reform in public schools for that age group. However, for the age range of birth to four years, there has been limited progress in terms of service provision for the age range birth to four years. Quality assurance standards have been raised, but there is still no national curriculum framework in place in the UAE for the early years. The importance of this embodiment of a society's educational aims and purposes appears well understood for school age children as the nation continues to refine and reform curriculum. The development of a curriculum framework for early childhood care and education is of critical importance in terms of reflecting broad societal values and aspirations and achieving the vision of the UAE.

Introduction and Context

This chapter explores the development of Early Childhood Education in the UAE, focusing on the period between birth and compulsory school age. In the UAE, the compulsory school age is six (Abu Dhabi Education Council, 2015; Bennett Report, 2009). From the outset, it is important to clarify what is meant by 'early childhood education' (ECE) in terms of service provision in the UAE. Early childhood education and care worldwide takes a variety of forms, 'ranging from parenting programs

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to community and home-based childcare, centre-based provision, pre-primary education and after-school care' (Karaman, 2011, p. 1). In the UAE, this takes the form of nurseries (government and private), in-home care (provided by parents and/or domestic workers), and kindergartens or early years sections within K–12 schools. It is important to note that internationally, early childhood is generally accepted as the period between birth and eight years (NAEYC, 2009). New and Cochran understand ECE as 'services provided during the period from birth to the age of compulsory schooling' (2007, p. xxv). The Knowledge and Human Development Authority (KHDA), which oversees private school education in the Dubai emirate, has adopted the zero to six age range as the definition of early childhood (Bennett Report, 2009). Abu Dhabi Education Council (ADEC), which had responsibility for overseeing private and public school education in the emirate of Abu Dhabi until 2017, also notes that compulsory schooling begins at the age of six and that attendance at kindergarten (age four to six) is not mandatory (ADEC, 2015).

Therefore in this chapter, a distinction will be made between Early Childhood Care and Education (ECCE), focusing on the age group birth to four (pre-kindergarten), and ECE, focusing on the age group four to six (kindergarten). The contexts of public and private education will be explored across the age range, including in-home care, public nurseries, federal nurseries, public kindergartens and kindergarten provision in private schools.

Care in Early Childhood Education

In the UAE, the discourse around early childhood centres on 'education' and 'childcare' as two separate terms. However, internationally the term Early Childhood Care and Education has become more widespread than Early Childhood Education (OECD, 2014). From the sociocultural point of view, 'understanding the role of care in practice requires an explicit acknowledgement of the critical contribution of the interpersonal aspect of early education' (Hayes, 2007, p. 19). 'Care' must be given as much attention as 'education' as they have different meanings. Indeed, the different meanings also have different connotations, something which can make it problematic to include 'care' when referring to early childhood programs unless one understands fully what 'care' means (OECD, 2014).

Hayes (2007) explains that care brings connotations of being custodial, mothering, looking after, indicating the child as a passive recipient. Perhaps it would be more appropriate to view care as nurturing. Nurturing brings with it more active meanings of actively nourishing, rearing, fostering, educating (Hayes, 2007). ECCE programs can be seen as encompassing a nurturing pedagogy as we try to reconceptualize 'care' so that it ranks equally with education in early educational process and practice (Hayes, 2007). The phrase 'educaring' has been used in the literature. It is well explained by Caldwell as follows: 'a developmentally appropriate mixture of education and care; of stimulation and nurture; of work and play' (1989, p. 266).

The inclusion of 'educaring' in the discourse around Early Childhood Education seems to lead away from the counterproductive potential 'schoolification' of early childhood program models (Ring & O'Sullivan, 2018). Therefore, the concept is introduced here at the outset to guide interpretation of current innovations and transformations in the early childhood education sector in the UAE.

Current Research and Innovation Trends in the UAE

Al-Momani, Ihmeideh and Momani (2008) note that development in the field of early childhood education has been slow compared to development in other areas in the UAE, leading to a lack of studies in the area. As of May 2018, the only policy documents or reports published on the official portal of the Government of the UAE dated from 2009—the *Bennett Report* and the *National Childcare Standards*.

There is limited empirical research publicly available in relation to public kindergartens or early childhood education in specific. The Salama bint Hamdan Al Nahyan Foundation (SHF) was founded in 2010 with the mission of investing in and expanding educational opportunities, with a particular focus on early childhood development. SHF acknowledges that while great progress has been made in education in Abu Dhabi since the birth of the nation, early childhood education remains an area for further development. SHF's vision is to equip the nation further in terms of human capital as a result of investment in their development at 'the crucial zero-to-three stage of life' (Education, n.d.).

Birth to Four—Early Childhood Care and Education

The age range birth to four sees children either staying at home with parents and/or domestic workers or attending 'Early Childhood Education Institutions' (ECEIs), commonly known as nurseries, for non-compulsory preschool education. It is important to note that in 2013, a policy distinction was made between nurseries and Early Childhood Education Centres (Ministry Orders Closure, 2013). At that time, nurseries were not subject to regulation by the KHDA in Dubai, while Early Childhood Education Centres that wanted to offer an established educational curriculum fell under KHDA regulation. It appears that at the time of publication, all education institutions for young children up to the age of four are subject to regulation. Throughout the chapter, for clarity, all nurseries will be referred to as ECEIs as that is the term currently in use. The age for admittance to an ECEI is not less than 45 days and not more than 4 years.

Early Childhood Education Institutions

There is limited information available about the development and status of ECEIs across the UAE. The most reliable information comes from the emirate of Dubai. Karaman (2011) notes that accurate data and records for ECEIs in Dubai date back to 1996, although the first licensed ECEI was established there in 1984. Since then, large numbers of ECEIs have been established to provide preschool services for the rapidly growing expatriate population during that time, as well as local families. However, most of the demand for nursery education is from expatriate families. As of 2014, the number of nurseries in the UAE was 497, with 35,552 children registered (Social Affairs: Children, 2017). The majority of these are private 'for-profit' nurseries, with only 39 operating as public 'not-for-profit' nurseries within government offices and departments (Salem, 2014).

Across the UAE, nurseries providing ECCE are monitored by a variety of agencies, leading to a 'fragmented regulatory environment' (Karaman, 2011, p. 4). For example, KHDA has in the past overseen licensing and policy development for this sector in Dubai, along with the Ministry of Social Affairs (MoSA). However, in early 2016, the responsibility for nurseries switched from MoSA to the Ministry of Education (MoE), with the restructuring of the federal government in accordance with Federal Law No. 14 of 2016 (Social Affairs: Children, 2017). With this transfer of supervision, came the establishment of the inspection directorate on ECEIs (2016). In the emirate of Abu Dhabi, as of 2017, the Department of Education and Knowledge (ADEK) is responsible for the licensing of nurseries. Other local agencies have been, and still are, also involved with nurseries across the emirates as appropriate (Bennett Report, 2009).

There is no national curriculum framework for ECEIs or ECCE in general. Instead, ECEIs follow a curriculum model or approach of their choice, for example, Early Years Foundation Stage, Creative Curriculum, or Montessori programs (Watson, 2014). The Bennett Report (2009) estimates that about 13 curricula from different countries are followed across the UAE. The Bennett Report notes that the *National Child Care Standards* (Dubai Women's Establishment, 2009) came close to being 'the' regulatory text outlining standards for early childhood at that time. The eight standards included licensing and administration, building and equipment, childcare organization, care and learning activities, safety and security, health care, nutrition, and partnership with parents. However, only two pages are dedicated to care and learning activities and therefore it cannot be viewed as a curriculum framework in any sense. It did serve to define acceptable requirements for childcare settings from a quality assurance perspective.

In 2016, the Ministry of Education published the *Early Childhood Education Institution Compliance Inspection Manual* [personal correspondence]. This supersedes the *National Child Care Standards* publication (Dubai Women's Establishment, 2009). This document utilizes a range of international and national compliance approaches for benchmarking purposes. Four main educational compliance standards have been identified, including organization and management, child safety, services

and care and building and resources. Similarly to the 2009 standards, there is no curriculum framework outlined, but rather mechanisms and regulations to meet the compliance process.

It appears that at the present time, the Ministry of Education is focused on raising compliance standards across ECEIs, rather than developing a national curriculum framework. According to Gandhi (2012), MoSA guidelines from 2012 stipulated either 18 or 30 h of annual professional development/training for each employee in an ECEI. The amount of training required per employee depended on the individual's initial qualification and their role in the ECEI. The training included mandatory training in child protection and paediatric first aid for all employees, while the topics for the remainder of the training could be elected by each ECEI or individual. In 2012, a number of organizations were selected by the Ministry of Education to provide such training, which typically would cost approximately USD 1000 per employee per year. At the time of publication, it is unclear whether or not this remains a stipulation for ECEIs.

The range of courses offered by approved providers (Arabian Child, 2016; Continuous Professional Development, 2018) shows that there is a demand for professional development regarding developmentally appropriate practice. Gandhi (2012) notes that while further training/professional development is welcome, the additional cost to the schools has not been welcomed considering the lack of 'support from the government, in an already fragile system, lacking structure' (p. 60). Furthermore, when a range of specific curricular frameworks is being implemented in various ECEIs, as is the case across the UAE, it is a challenge to provide practitioners with training specifically related to each framework.

Federal Nurseries

Council of Ministers' Decision No. 19 of 2006 mandates the establishment of ECEIs in government departments and public institutions for the provision of care for the children of female workers. This mandate is applicable to federal and local government departments with more than 50 female Emirati staff who have 20 children below the age of 4. This is a keenly felt need in the UAE as statutory maternity leave is limited to 90 days (OECD, 2017). This was increased in 2016 from 60 days of maternity leave for public sector workers. In the past, many new mothers with government jobs have been required to return to work when their children were as young as 6 weeks old, prompting many to resign or take long-term leave (OECD, 2017). The 2006 mandate aims to support working women by providing them the facility to have their children close by in a safe nurturing environment.

However, the mandate has not been followed through by many government offices or departments. By 2010, only seventeen government entities had established a nursery. One of the main reasons given by government bodies for not opening nurseries is having difficulty in finding appropriate locations with adequate space (Constantine, 2010). At that time, concerns over women losing the opportunity to be in leadership

roles were voiced (Constantine, 2010). By 2013, no nurseries had been set up at government bodies in Umm Al Quwain, Ras al Khaimah and Fujairah, with a total of 33 government nurseries licensed across the other four emirates by that time. The head of the children's department at the Ministry of Social Affairs, put that at a response rate of 14.3% to the cabinet decision of 2006 (Ministry Looks into Nurseries, 2013). She urged working mothers to insist on nurseries in government offices (Salem, 2014). She stated that at that time, only 39 government departments out of 320 had opened a workplace ECEI.

The 2006 mandate aims to provide affordable options to parents by setting the limit for these services at 1000AED per month, which is lower than the cost of many private ECEIs. Salem (2014) notes that many government departments lack a budget for opening and maintaining workplace ECEIs. The Ministry of Social Affairs is reported as being of the opinion that although the cost of federal nurseries is lower than private nurseries, they end up funding themselves. However, the ability of ECEIs to fund themselves is dependent on a wide range of factors including nursery staff, curriculum framework, and facilities/resources provided. It is not clear if government departments receive any federal funding specifically for running ECEIs.

The UAE's Gender Balance Indicators aim to advance and measure progress in three areas (OECD, 2017). One of these is building workplaces that support gender balance. The guide states that 'organisational policies and programmes should be analysed through a gender lens to address latent differences that may negatively impact men or women' (OECD, 2017, p. 29). A gender-sensitive approach will mean that policies and services will meet the distinct needs of women and men. It has been recommended by the OECD to undertake an evaluation of female staff members' experience with regard to a smooth transition back to work following maternity leave in case they face any barriers. It has also been recommended by the OECD to create family-friendly policies such as on-site childcare for either fathers or mothers, and special rooms for nursing mothers. This move is a long way from the recent past, where women were traditionally encouraged to value traditional roles such as homemaker and mother, with careers outside of the home traditionally considered part of the male domain (Schvaneveldt, Kerpelman, & Schvaneveldt, 2005). Indeed, the same authors point to education as being particularly influential in encouraging greater modernity. The provision of ECEIs in the workplace certainly supports family-friendly policies which will lead to meeting the KPIs for the Gender Balance Indicators. Salem (2014) reports a high level of satisfaction with workplace ECEIs in terms of added value, benefits to family life, psychological wellbeing, an increase in breastfeeding and less of a reliance on domestic workers. Furthermore, the timings and cost of government nurseries are claimed to be a better option for their employees. Issa (2013) reports the concern that private nurseries are expensive, profit-driven and close during the summer, as well as claims that mothers say fees in private nurseries are beyond their means, and they would not even want to fall pregnant without the option of having office nurseries.

The first government ECEI was established at either Dubai Customs or the Ministry of Social Affairs in Dubai. Press releases for both offices claim that they were the first. An ECEI was opened in 2009 at Dubai Customs (Dubai Customs Celebrates,

2009). It was designed to accommodate between 32 and 34 children. The curriculum followed was not mentioned in the press release. An ECEI was also opened in 2009 at the Ministry of Social Affairs. This ECEI also accepts children from employees at the Ministry of Labour and Ministry of Public Works (Constantine, 2010). The two branches accommodate 70 children. Dubai Electricity and Water Authority (DEWA) opened its first nursery in 2010 and a second in 2013 (59 Children Graduate, 2017). The Qasr Al-Atfal (Children's Palace) was opened as the ECEI at the Ministry of Presidential Affairs in 2011 (Nursery at Presidential Affairs, 2011). It appears that the Ministry of Presidential Affairs is planning on building a custom-designed nursery for this purpose (Nursery for Ministry, 2018). The most recent government ECEI was opened in 2017. The 'Al Basateen childcare centre' was launched by the Federal Authority for Government Human Resources at its headquarters in Dubai (FAHR Opens Childcare Centre, 2017). According to the press release, the nursery will also serve the employees of three other federal entities. Most of the media discourse around this opening relates to gender balance progress and improvement of the work environment. The opening coincided with the publication of the Gender Balance Indicators for the UAE (OECD, 2017). However, the ideal educational environment for nurturing children's talents and creativity is also praised (FAHR Opens Childcare Centre, 2017). The nursery is being run by a private chain of ECEIs in the UAE which follows the British Early Years Foundation Stage (British Orchard Nursery, 2018).

It is interesting to note that in most of the press releases, such as the ones from DEWA and the Ministry of Social Affairs, the discourse focuses on increasing employee satisfaction, a positive work environment, encouraging employees to excel, achieving work/life balance, empowering females, reducing resignations and absences and improving performance. The learning environment to be provided and curriculum framework to be followed in most cases receive a cursory mention, with an emphasis on 'highest international standards' in terms of furniture fittings and teaching methods.

It seems that one ECEI stands apart from others in this sense. The Early Childhood Learning Center (ECLC) was opened on campus at Zayed University (a federal university) in Abu Dhabi in 2013, with a second branch opened on Dubai campus in 2017. The majority of children at the ECLC are those of students, staff and faculty. The discourse around early childhood care and education in this ECEI is quite different from other ECEIs at federal institutions. While one press release comments on the fact that student mothers are supported as a result of having the facility on-site (Swan, 2015), the main press release about it focuses on the learning environment which focuses on child development, research, mothers being close to their children, having local teachers, trusting the teachers and the care taken with children's feelings and social development (Al Hashemi, 2013). This is quite different from the discourse around work/life balance and increasing productivity in press releases about other ECEIs mentioned above.

The ECLC sets itself apart as a laboratory school, affiliated with the College of Education. It has a vision of inspiring excellence in the care and education of young children (Dillon & Pinedo-Burns, 2017). Combined, both ECLCs have a capacity

of two hundred and ten children. The vision and mission of the ECLC is similar to one of the Salama bint Hamdan Al Nahyan Foundation's (SHF) priorities, which has as one of its aims the creation of a Centre of Excellence in Early Childhood Development, including an Early Childhood Development Center that would serve as a lab school for researchers and educators. As of May 2018, the Early Childhood Development Center was at the 'design' phase and therefore ECLC is to the best of the author's knowledge the only purpose-built laboratory school in the country.

In terms of community outreach, the ECLC has offered a range of parenting and research talks each semester since 2015 (for example 'Coffee talk at the ECLC', 2016). The SHF also has a similar aim of raising broad public awareness by offering talks by international experts in early childhood development and parenting talks free of charge to the public. Between 2013 and 2015, this included talks about emotional intelligence for young children (Zaman, 2014), about parenting styles and setting limits (Maaty, 2014), and fathers as equal partners in parenting (Al Khoori, 2014).

The ECLC follows the Creative Curriculum (Teaching Strategies, 2010a, 2010b) and offers a bilingual program with co-teachers working together to enhance emergent bilingual language development among young children. While the quality of care and education offered by the ECLC is high and the mission and vision is unique among ECEIs in the UAE, it differs from other federal nurseries in the area of tuition fees. This is a particular challenge for the ECLC. The tuition fees are comparable to private nurseries even though it is not a for-profit organization, notwithstanding a discount offered to students, faculty and staff. The main budget expenditure in the ECLC is staff. In order to maintain staffing levels, ensure quality and to support Emiratization, salaries are slightly higher than the average ECEI employee in the UAE in the case of expatriate teachers, and considerably higher in the case of Emiratis. Emirati women typically do not work in ECEIs as teachers, as it is more common for Emirati women to work in the public sector than the private sector.

Research supports having qualified and well-paid staff lead learning in ECEIs. As Gandhi states, 'The true resource of a preschool is its qualified and trained workforce' (2012, p. 60). According to the OECD (2012), practitioners with specialized training and higher education are linked to more positive child–adult interactions. Furthermore, fully qualified pre-primary teachers who were given higher salaries equivalent to their primary education colleagues resulted in student performance that was two or more times larger in literacy and math (Pianta, Barnett, Burchinal, & Thornburg, 2009). The reference to student performance in specific subject areas does not fit well with the earlier narrative regarding 'educare', However, it is worth noting in terms of salaries available for practitioners in the early years sector. In terms of salaries, and indeed financial investment in early childhood development overall, Ochs (2013) finds that childcare is not treated as highly as primary education in many countries, despite reports that every dollar invested in early childhood yields a potential eight dollar return (UNICEF, 2010). The financial implications along with the potential 'schoolification' of ECE will be returned to later.

In-Home Care

The Bennett Report states that the vast majority of Emirati children are reared at home. He calls this the 'child-at-home' model and considers that it is reinforced by the availability of female domestic workers from Asian countries including India, Pakistan, the Philippines and Sri Lanka. As of 2009, less than 5% of Emirati children aged zero to four were enrolled in nurseries (Ministry of Social Affairs, cited in Karaman, 2011). The majority of Emirati children are raised at home up to kindergarten level. Roumani (2005) notes that this model is widespread in the Gulf States and started in the 1970s with the onset of the oil boom. She states that childcare duties are often delegated to these domestic workers, along with a variety of other duties including cleaning, ironing, and dishwashing.

Roumani finds that it has become an 'acceptable standard practice' for families to let the family maid care for children and that it has become a 'well-established social norm' (2005, p. 150). Furthermore, she notes that it is convenient for parents to have domestic workers engaged in childcare; not only are they available all of the time, in the home, and at a much lower cost than a licensed nursery, but also they are readily available and easy to hire and dismiss.

The Bennett Report (2009) cites multiple reasons to explain the preference among Emirati families for the child-at-home model, with some related to a lack of knowledge about nursery services and programs, a lack of parental guidance, a lack of quality and/or affordable nurseries, a lack of nurseries attached to the workplace, traditional family attitudes discouraging nursery care and education and a belief that young children should be reared at home. Roumani (2005) also highlights the social status associated with having a domestic worker. In her study, she found that almost all Gulf nationals employed more than one domestic worker. Furthermore, Gandhi (2012) notes that the quality and cost of private nurseries in Dubai is highly variable and fees may be prohibitive for some families. Indeed, Selim (2016) raises the question of how ethical it is to essentially prohibit parents from enrolling their children in quality schools due to the cost, a question which may be equally raised in relation to ECEIs.

There are a number of challenges related to the child-at-home model, particularly where the domestic worker holds the bulk of responsibility for childcare. Al Sumaiti (2012) notes that the ease of hiring and dismissal of domestic workers could lead to emotional tension for the child. Furthermore, domestic workers usually hold no qualification for childcare (Al Sumaiti, 2012; Gandhi, 2012). Typically, domestic workers speak languages other than Arabic as a mother tongue, and so may not be able to communicate with the young children under their care in Arabic, the first language of the majority of young children across the emirates. Al Sumaiti warns that parents 'need to closely observe the impact of caretakers on their children's acquisition of language and on their emotional and behavioural development' (2012, p. 4). This is further compounded by the amount of time which children tend to spend in the care of domestic workers (thirty to seventy hours per week), which typically exceeds the length of time they would spend in ECEIs. This may cause

attachment issues, leading to behavioural problems (Al Sumaiti, 2012; Roumani, 2005). A further concern is that the types of tasks typically carried out by domestic workers for children under their care tend not to be developmentally appropriate, but rather excessive, for example, feeding the child at an age where they should be able to feed themselves. This could contribute to a learned helplessness 'which could affect the child's potential for growing into a self-reliant and responsible adult' (Bradley, 2010, p. 3).

Gandhi (2012) suggests that demand among Emirati families both for childcare and a pre-kindergarten year may be stronger than enrolment figures suggest despite the preferences noted above. She cites a survey conducted by KHDA which suggests that the majority of women working in government departments would make use of a child care facility if provided, and high-quality childcare was provided by trained educational specialists. One government employee is quoted in 2010 as having considered quitting her job with Dubai Municipality to be with her four children, unless she had a domestic worker caring for them at home. It is reported that al Hashemi said 'If there was a nursery at my work of course I would send them there if I found the training and the conditions to be right' (as cited in Constantine, 2010).

Age Range Four to Six—Kindergartens in the UAE

The availability of education provision for four to six-year-olds in the UAE differs according to nationality. Emirati children are provided with the choice of attending public schools, including kindergartens, or private schools, whereas expatriate children must attend private schools (Coughlin, Mayers, & Woolridge, 2009; Selim, 2016; 'Private schools in the UAE', 2017), should they choose to send their children to school before the age of six. Some Emirati parents choose to enrol their children in private schools rather than public schools. In the emirates of Abu Dhabi and Dubai, the number of Emirati children attending private schools is on the increase (ADEK, 2017; Knowledge and Human Development Authority, 2018). Similarly to ECEIs, private schools are overseen and licensed by various bodies—the MoE holds overall jurisdiction in all seven emirates, but the two wealthier emirates 'have both established education authorities independent of the MoE to monitor, assess and indirectly develop private schools' (Selim, 2016, p. 16): ADEK in Abu Dhabi, and KHDA in Dubai.

Public Kindergartens

Coughlin et al. (2009) provide the most comprehensive historical overview of public kindergartens in the UAE to date. According to them, the first public kindergarten in the UAE was opened in Abu Dhabi in 1968. However, Al-Momani et al. (2008) offer a different date of 1955 for the establishment of the first public kindergarten

in the country, in Ras Al Khaimah, one of the smaller Northern Emirates. Such contradictory information is typical of the lack of documentation and research in this sector. Five years later, there were seven kindergartens across the UAE, while by 2009 there were 1092 public kindergarten classes serving 22,506 Emirati children between the ages of four and six. According to the latest data from the Ministry of Education (School Statistics, 2017), there were 1634 kindergarten classes open in 124 public kindergarten schools across the UAE in 2016–2017, serving 37,324 Emirati students. This shows a huge growth over the last fifty years.

Having previously drawn from the curriculum used in Kuwait, the MoE developed its own public school curriculum in 1982. It implemented a national kindergarten curriculum in 1999 (Coughlin et al., 2009). This was informed in part by the establishment of the Kindergarten Development Center (KDC) in 1992 (ibid.). The KDC was established with the cooperation of the MoE and other agencies including UNICEF. Contradictory information is offered by Al-Momani et al. (2008), who state that the Ministry of Youth Affairs produced a new curriculum called the 'developed curriculum' in 2001.

In any case, regardless of which particular date is correct, education reform was gaining speed at that time in the late 1990s/early 2000s. Coughlin et al. (2009) and Al-Momani et al. (2008) are in agreement that prior to that, teachers in UAE kindergartens had employed direct instruction methods and emphasized academic tasks such as completing worksheets due to previous MoE directives. According to Coughlin et al. (2009), the goals of the new MoE curriculum in the early 2000s supported the nature of the child by emphasizing the importance of educators considering 'each child's development from a holistic perspective' (p. 18), and recognizing the interrelatedness of the 'cultural, social-emotional, physical, intellectual and creative facets of development' (p. 18). At the time of that publication, the authors could see that programs were being aligned with 'best international practice and experience, current research, and developmentally appropriate principles of early childhood development and learning' (Coughlin et al., 2009, p. 18). However, Al-Momani et al.'s study (2008) found that even a number of years after the introduction of the 'developed curriculum', teachers found it very difficult to change their beliefs about the teaching and learning process. Teachers had been used to a highly structured system mandated by the government, where instructional units and worksheets were handed to teachers with little room for creativity and teacher-designed or child-led tasks and activities. The majority of teachers wanted more academic skills to be developed at kindergarten level. Despite the vision of the revised curriculum, they remained attached to the direct instructional approach, something which raised concerns for Al-Momani et al. (2008) as they consider that experiences that children have at kindergarten level can be critical for future progress and success at school.

The Al Ghad School curriculum, which was developed based on a project inaugurated in 2008, further emphasized active learning and problem solving across all grade levels including kindergarten. It was part of a 5-year strategic plan towards school reform, implemented through a 'partnership with the UAE Ministry of Higher Education and Scientific Research, education services provider Association for Supervision Curriculum Development and the College of Education at Zayed University' (Cough-

lin et al., 2009, p. 18). This was closely followed by another iteration of reform, in the form of Abu Dhabi Education Council's (ADEC) strategic plan (2009–2018). This aimed to 'reform the emirate's education system by promoting a bilingual approach to learning at the K–12 level' (O'Sullivan, 2015, p. 425). According to Gallagher, this forms a particular model of second language immersion which she terms a 'side-by-side early partial immersion model' (2011, p. 69).

At kindergarten level in Abu Dhabi, this partial immersion model has seen English-medium teachers, who have primary responsibility for English, Maths and Science, work together with Arabic Medium Teachers, who have primary responsibility for Arabic, Islamic Studies and Civics. Dillon, Salazar and Al Otaibi (2015) note that the co-teaching model has been in a constant state of change and fluidity since the process of education reform began. The aim of what started as the New School Model and was re-termed the Abu Dhabi School Model was 'to raise the academic outcomes of Abu Dhabi students to the internationally competitive level necessary to achieve Abu Dhabi Economic Vision 2030' (ADEC, 2013 [personal correspondence[). According to Policy 7110 on Language of Instruction (ADEC, 2013 [personal correspondence]), at KG level the goal was for instruction to be provided 50% in Arabic and 50% in English by the end of KG2, with teachers working collaboratively to achieve this goal subject to ADEC's capacity to recruit and train staff. Furthermore, Policy 7120 on Curriculum for the New School Model established that the curriculum would be oriented around a set of learning outcomes for each subject and grade level, with a dual focus on Arabic and English (ADEC, 2013). It is clearly stated that teaching and learning resources should be used in a way that 'facilitates an active learning environment', and that 'students should learn by doing'. For KG and all cycles implementing New School Model, Policy 7120 states that Heads of Faculty should work together to identify areas where 'similar concepts and content can be jointly taught' by the AMT and EMT (ADEC, 2013).

As of late 2017, ADEC's reforms have been discontinued while the new term used across the emirates is 'Emirati School Model'. It remains to be seen how this will be manifested in terms of early years' curriculum going forward. As of the time of publication, it was still unclear what changes would be happening in kindergarten schools across the seven emirates, but it was becoming clear that it would be uniform across all of the Emirates rather than the emirate of Abu Dhabi following one curriculum and the emirate of Dubai following a different one.

Kindergarten Provision in Private Schools

The UAE is the leading country for English-medium K–12 international schools, with the highest enrolment of any country in the world (Global Report, 2016). 567 private schools were in operation across the UAE in 2016–2017 with 100,642 children attending kindergarten sections in those schools (School Statistics, 2017). This accounts for 13% of children enrolled in these K–12 schools. According to ADEK (Learning Varieties, 2018), thirteen different curricula are offered across the emirate

of Abu Dhabi. The Knowledge and Human Development Authority (2018) report a total of seventeen different curricula offered in the emirate of Dubai. The most common organizational model for international schools in the UAE is the K-12 vertical model—there are very few standalone kindergarten schools.

Despite the number of children attending these private schools in the early years in the UAE, there is limited research available for this sector. The only documents which are publicly available in the emirate of Abu Dhabi are Irtiqa'a inspection reports (Inspection Reports, n.d.), which cater for the full age range of the school. The Private Schools and Quality Assurance Sector was established in 2010 to organize, license, inspect and support private schools in the emirate of Abu Dhabi, while the KHDA Dubai Schools Inspection Bureau has been inspecting schools since 2008.

The KHDA report *Dubai private schools: A decade of growth* (2018) highlights some instances of good practice at kindergarten level. One kindergarten is highlighted as showing flexibility and sensitivity to children's needs, as well as meeting very good standards in mathematics. The progress of two other private schools in English in the early years is also highlighted. According to the report, the school has systematically focused on the development of children's speaking and listening skills through facilitating children learning cooperatively in language-rich contexts, leading to very good progress for kindergarten children. The importance of children's communication skills to their intellectual, social and emotional development is also highlighted.

These comments on three schools in the emirate of Dubai show an emphasis on communication skills (speaking and listening), learning cooperatively, flexibility and sensitivity to children's needs, and attainment in Mathematics. Combined with the reports from Abu Dhabi, these inspection reports show an emphasis on academic attainment as well as learning skills.

Discussion

Vision 2021 contains a set of statements outlining the vision for education in the UAE. One statement to that effect is as follows, regarding Emiratis having access to a first-rate education and thereby contributing positively to society (Vision 2021 United Arab Emirates, 2014, p. 23). Furthermore, the national agenda states that in the development of a first-rate education system 'There will also be significant investments to promote and reinforce enrollment in preschools as this is critical to shaping children's personalities and their future' (National Agenda, n.d.). UNICEF (2010) advises that investments in early childhood give children enhanced opportunities for success later in life, and that the critical moments of early childhood must be harnessed productively for all children.

One of the aims of the SHF has been to build a new generation of specialists through the Fellowship in Early Childhood Development. The cohort of 2014–2016 included eight women working in the sector of Early Childhood Education in the UAE. These types of initiatives, which are focused on enhancing Emirati women as

ECE leaders, reinforce the importance of early childhood, along with meeting the KPIs of the Gender Balance Indicators (OECD, 2017). Women such as these would be ideally placed to work with the Ministry of Education, along with experts in the field, regarding the development of a national curriculum framework for ECEIs. However, the small numbers of women involved will make it very difficult to see an impact. Therefore, programs such as these should be expanded.

Progress has been made for the age range 4 to 6 years in terms of enhancing quality through rigorous inspection frameworks based on international best practice, as well as in terms of curriculum reform in public schools for that age group. Approaches to teaching and learning at kindergarten have changed drastically, moving from a focus limited to academics, to more of an emphasis on creativity, communication and the holistic development of the child. However, as education reform continues across the K–12 sector, it remains to be seen how what has been learned will be put into practice.

However, at a national level, there has been limited progress in terms of service provision for the age range birth to 4 years. With regard to federal nurseries, there has certainly been an increase in program provision, albeit at a slow rate. Budgets for running such ECEIs are of concern to the federal units. Quality assurance standards have been enhanced. However, there is still no national curriculum framework in place in the UAE. Instead, a variety of curriculum frameworks are in place across federal and private nurseries. The lack of such a national framework may be one reason why the area of ECE is underdeveloped in the UAE (Gandhi, 2012).

Conclusion

Many families will continue to prefer the child-at-home model, with either parents, other family members or domestic workers taking responsibility for nurturing young children. In-home care is popular worldwide. However, the potential negative implications of having domestic workers take on the role of childminder have been outlined earlier in the chapter. A national curriculum framework for ECCE would provide a reference point for quality practice for those involved in in-home care. An expansion of the 2016 *Early Childhood Education Institutions Compliance Inspection Manual* [personal correspondence] to include quality assurance guidelines to in-home carers and families would allow all stakeholders to benchmark their practices against nationally agreed standards.

A most worthwhile lasting contribution to the field would be to build on the work that has been done on the *Early Childhood Education Institutions Compliance Inspection Manual* (2016) and develop a national curriculum framework for early childhood. This framework would be appropriate to the context of the UAE, while continuing to build on international best practice. The curriculum can be seen as ‘a political and social agreement that reflects a society’s common vision while taking into account local, national and global needs and expectations’ (UNESCO IBE, 2016, p. 6). The importance of this embodiment of a society’s educational aims and purposes

appears well understood for school age children as the nation continues to refine and reform curriculum for school age children. However, it is absent for the early years. A national curriculum framework for the early years needs to be developed in order to achieve the vision of the UAE, ideally in the context of federal nurseries. This is not to say that ECEIs should either operate in the same manner as schools, or be seen as a place to further traditional academic achievement at this young age. Rather, a national curriculum framework for early childhood should support the celebration of early childhood as a 'time of being' (NCCA, 2009, p. 6), with young children 'enjoying and learning from experiences as they unfold' (NCCA, 2009, p. 6)), and as laying the foundation for lifelong learning. This is echoed by Urban's call for practitioners and policymakers to understand the different ways children have of 'being, knowing and doing' (2018, p. 5). The development of a curriculum framework for early childhood care and education is of critical importance in terms of reflecting broad societal values and aspirations and achieving the vision of the UAE while also raising the bar for appropriate care and education at this crucial developmental stage.

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Chapter 3
The Growth and Transformation of K–12 Education in the UAE

Susan Kippels and Natasha Ridge

Abstract Since the founding of the United Arab Emirates (UAE) in 1971, access to quality education in the country has steadily improved as the result of the considerable investment, numerous reforms, and specialized initiatives. Education has been a high-priority sector for the UAE as the government recognizes that a strong educational foundation is necessary for the country to reach its ambition of diversifying and developing its economy. This chapter begins by providing a brief historical overview of education in the country, with a focus on the public sector. It then examines a few key characteristics of its modern-day K–12 education ecosystem, including the roles of regulatory bodies, the small number of national male educators, and reforms related to curriculum. Next, it provides an overview of some innovations in education in the country, specifically in the areas of technology, technical and vocational education, and student well-being. Finally, we discuss how the public K–12 education sector could be strengthened through developing additional initiatives to attract more Emirati males to the teaching profession, diversifying the national curriculum, improving communication between stakeholders, and increasing the amount of publicly available education research.

Historical Overview of Schooling in the UAE[1]

Over the past century, the provision of education in the Arabian Peninsula has rapidly expanded. Education in the region started in local mosques and consisted of Islamic teachings as well as the basics of reading and writing (AlNaqbi, 2009; Ridge, 2009). The local *mutawa'a* (religious preacher) or the *fiqi* (visiting religious teacher) led these classes (AlNaqbi, 2009; Ridge, 2009). However, at the turn of the nineteenth

[1] Selected sections of this chapter are adapted and updated from two policy papers written by the authors and which have not been published outside their affiliated organization, the Sheikh Saud bin Saqr Al Qasimi Foundation for Policy Research. These sources are Ridge, Kippels, and ElAsad (2017) and Ridge, Kippels, and Farah (2017).

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century, the region grew wealthier following a boom in the local pearling industry, and there was an expansion in both the amount and type of education provided.

With this newfound prosperity from the pearling industry, the demand for and supply of education started to grow. In the region that is today the United Arab Emirates (UAE), the first private schools for boys were opened in Dubai and Sharjah in 1912 (Davidson, 2008). Pearl traders, who had been exposed to Western-style schools during their travels, were the first to open these schools and did so as independent initiatives (AlNaqbi, 2009). By the 1920s, many other emirates had also opened schools using curricula and teachers from neighboring Arab nations (Davidson, 2008; UAE Ministry of Education, 2013). Unfortunately, when the pearling industry collapsed in the 1940s, many of these early education developments ended (Davidson, 2008).

By the 1950s, however, with the discovery of oil in other parts of the Gulf, the economy started to rebound and schooling began to expand again. The development of the education system at this time in the region of the UAE was in large part due to the support of Kuwait's Sheikh Abdullah Salem al Sabah, who provided curricular support and salaries for expatriate teachers (Davidson, 2008). The financial backing from Kuwait led to the opening of what became the country's first modern public school in the emirate of Sharjah in 1953 (Ridge, 2014; UAE MOE, 2013). While some schools were funded by Kuwait, additional schools were established in the 1960s by other neighboring states, including Egypt, Bahrain, India, Iran, Saudi Arabia, and Qatar (Bahgat, 1999; Brooks, Fuller, & Waters, 2012; Davidson, 2008; Suliman, 2000). Normally, the countries that financially backed schools also staffed them and used their own texts and curricula. Despite the establishment of several schools during this period, education remained largely accessible only to children from privileged backgrounds (Ridge, 2009).

With the discovery of oil and the subsequent establishment of the UAE in 1971, the Ministry of Education (MOE) was formed, laying the groundwork for the national education system that exists in the country today. The new MOE unified the nation's diverse mix of schools and consolidated approximately 50 schools previously run by the Kuwaiti government and other entities (Ridge, 2009; Suliman, 2000). Around this time, the MOE also declared basic education as compulsory for all national children (Ridge, 2014).[2] As part of the continued effort to standardize the education system, in 1979, the MOE launched the country's National Curriculum Project, and a national curriculum was fully implemented in 1985 (Ridge, 2009).

With this historical context of the education sector in the UAE in mind, the rest of this chapter explores key characteristics of the country's modern-day K–12 education system. It starts with an overview of the education ecosystem and focuses on the public sector. It next outlines several transformations that have influenced education in the UAE, focusing on the areas of technology, vocational education, and well-being. Finally, it concludes with suggestions for public education policies and initiatives that could support the sector moving forward.

[2] A law was passed in 2012 that made education compulsory for all Emiratis through Grade 12, or until age 18 (Abu Dhabi Digital Government, 2018; Ahmed, 2012b).

UAE K–12 Education Ecosystem

The UAE K–12 education sector is managed at both a federal and emirate level, and this section provides an overview of regulatory bodies as well as a brief discussion of the public and private school sectors. In this section, we also explore the key characteristics of public school teachers, Emirati students, and the national curriculum.

Overview of the Education Sector

In the UAE, education regulatory bodies operate at both the federal and emirate level, and these include the Ministry of Education (MOE, Dubai headquartered), the Department of Education and Knowledge (ADEK, Abu Dhabi headquartered),[3] Education Zones (offices in each emirate), and the Knowledge and Human Development Authority (KHDA, based in Dubai). While the specific mandates of these entities are relatively complex and evolving, each of these four key regulatory bodies is briefly described in Fig. 3.1.

At the federal level, there is a Minister of Education to whom both the Minister of State for Public Education and the Minister of State for Higher Education report (UAE MOE, 2018). In 2017, a merger between the MOE and Abu Dhabi's ADEK brought about a large-scale shift in the UAE's education landscape. This was done to encourage greater cooperation through aligning the "thinking and culture" of

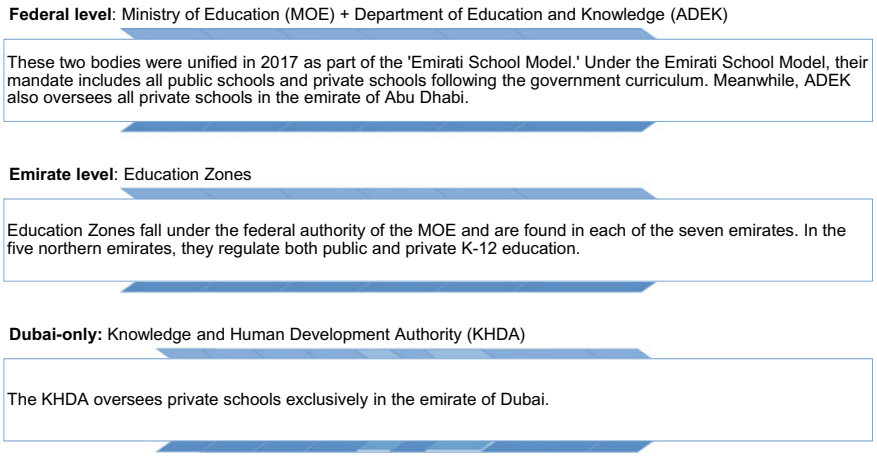

Fig. 3.1 UAE education authorities and their respective mandates

[3]Up until September 2017, ADEK was known as the Abu Dhabi Education Council (ADEC) (*The National*, 2017a). ADEC was initially established in 2005.

schools and higher education institutions (Pennington, 2016b, p. 1). At this time, the two government entities partnered to standardize the UAE's education system by establishing the Emirati School Model. Through the Emirati School Model, the MOE and ADEK work together to regulate public (government) and private schools (Abu Dhabi Education Council [ADEC], 2016; Langton, 2017).

At the emirate level, each of the seven emirates has an 'Education Zone' that serves as the local office for the MOE. Education Zones provide direction and coordination between the MOE and local public and private schools. In the past, these Education Zones were responsible for the supervision and implementation of federal and local policies as well as supporting administrative staff. However, their responsibilities shifted in 2016, and in the northern emirates,[4] the focus is now mostly on the licensing of public and private schools. Meanwhile, in Abu Dhabi, ADEK is solely responsible for overseeing the non-MOE curriculum of private schools, and in the emirate of Dubai, the KHDA serves as the regulatory authority for all private schools.

In terms of public education, many government schools are single-sex[5] and the primary language of instruction is Arabic, with English used to teach select subjects in some settings (Abu Dhabi Digital Government, 2018). Public schools are divided into a four-tier system covering 14 years of education. These levels are Kindergarten (KG1–KG2, 4–5-year olds), Primary (Cycle 1, Grades 1–4, 6–11-year olds), Preparatory (Cycle 2, Grades 5–8, 12–14-year olds), and Secondary (Cycle 3, Grades 9–12, 15–17-year olds) (Government.ae, 2018b; MOE Personal Communication, 2018). In 2018, there was a discussion of the MOE expanding the duration of schooling to include Grades 13 and 14, likely as a means to remove the foundation year, in which many students enroll when entering public universities (MOE, personal communication, 2018).[6]

While the education system in the UAE is primarily comprised of a public and private sector,[7] there are also schools that could be classified as quasi-governmental[8] operating in the country. In 2016–17, there were 659 public schools and 567 private schools in the UAE. The private school sector, which is dominated by for-profit entities with a few not-for-profit schools, is currently growing at a faster rate than the public sector, largely to meet the growing needs of the expatriate population. In

[4]The northern emirates are Sharjah, Ajman, Fujairah, Ras Al Khaimah, and Umm Al Quwain.

[5]In July 2018, the MOE announced that Grade 1 would become co-educational starting in September 2018, with the plan to merge a new grade of boys' and girls' classes annually up until Grade 5 (Dajani & Rizvi, 2018).

[6]However, this has not yet been implemented, as of publication.

[7]Private schools in the UAE are diverse and offer a wide range of curricula. In the emirate of Dubai alone, there were 17 curricular options offered in its network of private schools during the 2015–16 academic year, with the most commonly used curricula being from the United Kingdom, the United States, and India (KHDA, 2016). Other curricula offered at private schools across the UAE include those from France, the Philippines, Germany, and Pakistan (KHDA, 2016; WhichSchoolAdvisor.com, 2016).

[8]The Emirates National Schools represent a quasi-governmental school network. Emirates National Schools are fee-charging schools that were started in 2002 under the Ministry of Presidential Affairs (Emirates National Schools [ENS], 2016).

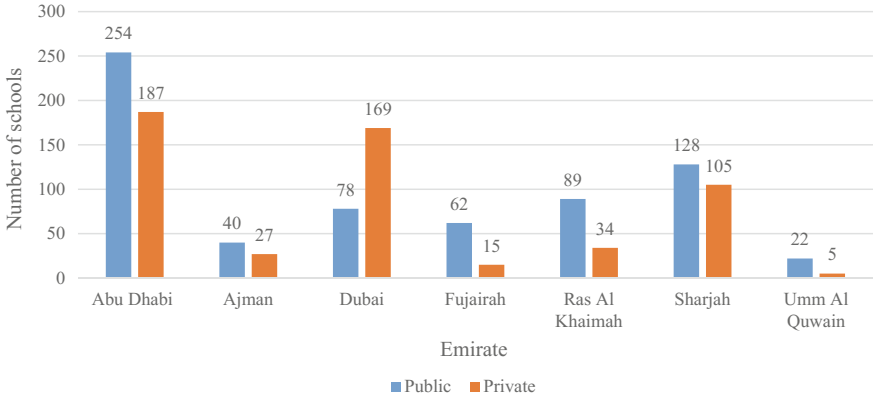

Fig. 3.2 School types across the UAE, by emirate (2016–17) (UAE MOE, 2019)

2010–11, 39% of schools were private and 61% were public, but by the 2016–17 academic year, the percentage of private schools had increased to 46% while the percentage of public schools had decreased to 54% (UAE MOE, 2010, 2019). Figure 3.2 shows the breakdown of public and private schools across the UAE by emirate in 2016–17.

The growth in private schools has been the most pronounced in the emirate of Dubai, where there are more than two private schools for every public school, as shown in Fig. 3.2. This is in contrast to the rest of the UAE, where public schools still outnumber private schools. According to MOE data from 2017–18, the private school sector catered to approximately 73% of the country's student population, including both Emirati and expatriate students (UAE MOE, 2019). In Dubai, the figure is even higher, where 90% of all students in the emirate were educated in private schools during the 2015–16 academic year (Knowledge and Human Development Authority [KHDA], 2016). Nonetheless, the public system predominately serves Emirati students. Part of the challenge in providing high-quality education is the provision of an equally well-qualified teaching workforce, and we next explore the demographics of public school teachers.

Public School Teachers

In the UAE, public school teachers are recruited both locally and internationally, and in 2017–18, there were approximately 23,100 teachers responsible for teaching around 287,700 students (UAE MOE, 2019). During the 2014–15 school year, there were 11,813 Emirati teachers and 11,965 expatriate teachers in UAE public schools (UAE MOE, 2015). While this breakdown was almost an even split between nationals and expatriates, the proportions vary across individual emirates with a larger

proportion of expatriate teachers in Abu Dhabi, Al Ain, and the Western Region than in Fujairah and Ras Al Khaimah. This is likely explained by the policy to hire a large number of native English-speaking teachers in the emirate of Abu Dhabi to teach core subjects, such as mathematics and science, in English (Dajani, 2016; Sankar, 2013).

While females sometimes teach at boys' primary schools, only males teach at boys' schools at the preparatory and secondary levels. Examining the Emirati versus expatriate breakdown by gender, Table 3.1 shows the nationalities of the UAE's public school teachers by gender and emirate, as of 2017. There are more female Emirati teachers than female expatriate teachers in all regions except for Abu Dhabi, where it is approximately even. On the other hand, that there are not many male Emirati teachers across all emirates.

Nationwide, male Emirati teachers comprise only 10% of the male public school teaching population. However, in some emirates, such as Dubai, Ajman, and Umm Al Quwain, males make up less than five percent of all Emirati teachers. Not shown in Table 3.1 is that there are also many more female than male teachers at the primary level. In the 2017–18 academic year, 91% of primary school teachers in the UAE were female while only 52% of public school primary students were (UAE MOE, 2019). The low participation rate of Emirati males in the education sector appears to reflect a belief that teaching is not a desirable profession for males, and this belief has been attributed to the fact that males have employment opportunities in other, more lucrative fields (Ridge, 2014; Salama, 2012). Due to the shortage of male Emirati educators, expatriate males often teach boys at the preparatory and secondary levels. Yet Emiratis, as outlined in the next section, comprise the majority of public school students.

Table 3.1 Emirati and expatriate public school teachers in the UAE by gender and emirate (2017), by percentage (%)

Emirate	Male (%)		Female (%)	
	Emirati	Expatriate	Emirati	Expatriate
Abu Dhabi	13	87	49	51
Ajman	4	96	67	33
Dubai	4	96	67	33
Fujairah	10	90	87	13
Ras Al Khaimah	8	92	86	14
Sharjah	10	90	75	25
Umm Al Quwain	2	98	68	32
Public school teaching population (total)	10	90	62	38

Note Data from March 2017. Adapted from Ridge, Kippels, & ElAsad (2017) and UAE MOE (2017)

Emirati Students

From kindergarten through university, Emirati citizens are eligible to attend government schools, colleges, and universities free of charge (Abu Dhabi eGovernment, 2016). As such, nationals comprise the majority of public school students across all emirates. Figure 3.3 shows the breakdown of the number of Emirati versus expatriate students in UAE K–12 public schools by region. During the 2014–15 academic year, 81% (223,000) of all public school students were Emirati, and the majority of the remaining 19% (51,100) were predominately Arab expatriates (UAE MOE, 2015). The presence of Arab expatriate students versus those from other backgrounds can largely be attributed to the fact that Arabic is the primary medium of instruction across most of the country in public schools and that there is a fee charged to non-nationals (Abu Dhabi eGovernment, 2016; Government.ae, 2018a; UAE Government, 2016).

Despite over 220,000 Emiratis attending public schools, Emiratis are also increasingly enrolling in private schools (UAE MOE, 2015). Across the UAE, during the 2014–15 school year, there were approximately 113,000 Emirati students enrolled in the private system nationwide, comprising approximately 17% of all private school students (Ridge, Kippels, & ElAsad, 2017; UAE MOE, 2015). This growth has been particularly pronounced in Dubai, where, according to Kenaid (2011), from 2003 to 2010 there was a 75% increase in the enrollment rate of Emirati students in private schools.

The growing preference for Emiratis to send their children to private schools reflects a widespread belief that private schools offer a higher quality of education than public schools. However, an analysis of the Progress in International Reading Literacy Study (PIRLS) 2016 assessment results shows that, on average, Emirati students attending private schools with an American curriculum achieved lower scores than Emirati students attending public schools under the MOE (Buckner, forthcom-

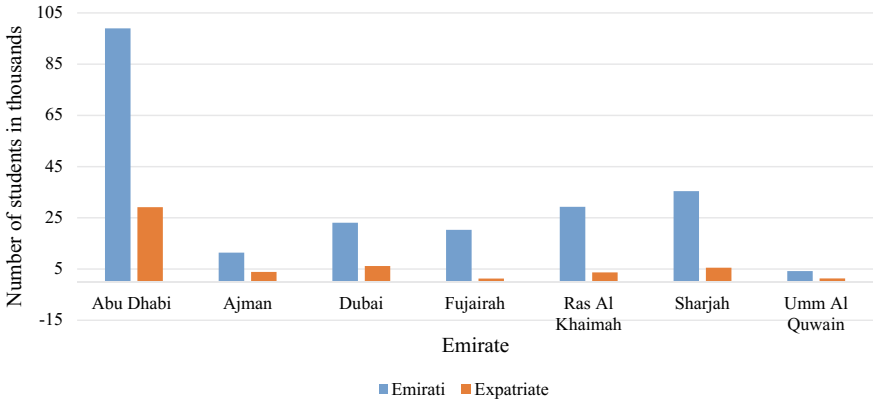

Fig. 3.3 Emirati and expatriate students in public education across the UAE, by emirate (2014–15). Adapted from Ridge, Kippels, & ElAsad (2017), and UAE MOE (2015)

ing; IEA, 2016). As such, there is a growing need for more information for parents about the performance of private and public schools so that they are not making uninformed, and possibly detrimental, decisions about their children's schooling. Curriculum regularly plays a role in parents' school choice, and we next examine key changes over time in the MOE curriculum, the curriculum used across public schools and in certain private schools that elect to use it.

Curriculum Reforms

In the early days of UAE public school education, there was a strong focus on importing curricula from the Arab world, predominantly from Egypt (Findlow, 2001). However, as time progressed, the UAE began to look elsewhere for education models, and in the mid-1990s, Western countries started to have a greater influence on the national curriculum. Since that time, the UAE has implemented several reforms targeting its national curriculum, and these reforms have typically included incorporating the English language to varying degrees. Figure 3.4 outlines the four most significant curriculum reforms in the UAE from approximately the past 25 years.

In an effort to improve student achievement, the UAE Model Schools, was launched in 1994. Model Schools were designed to meet the increased need worldwide for science-educated and English-proficient graduates (Shaheen, 2010). These schools taught science and mathematics in English, alongside the expansion of the use of technology in the classroom (Sarsar, 2007). By 2010, the UAE Model Schools initiative had grown to reach approximately 18,000 students in 40 public schools across the country (Shaheen, 2010). However, Shaheen (2010) found that the performance of Model Schools varied widely, there were challenges related to recruiting and training teachers, and entrance requirements excluded special needs students. As such, the initiative was gradually abandoned, and as of 2018, almost all of the former Model Schools have reverted to following the MOE's public school curriculum and regulations (Chung, forthcoming).

The next significant reform related to the curriculum was the *Madares Al Ghad* (Schools of Tomorrow) initiative, which was launched in the 2007–08 school year across 50 public schools (Kannan, 2008). The *Madares Al Ghad* schools were designed to improve students' English levels, and English language textbooks in

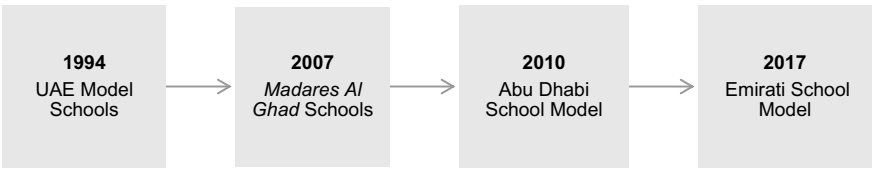

Fig. 3.4 Timeline of four of the UAE's key curriculum reform initiatives, 1994–2017. Adapted from Chung (forthcoming)

science and mathematics were introduced (previously these subjects were taught in Arabic) (Ridge, Kippels, & Farah, 2017). However, there were difficulties related to recruiting qualified, bilingual teachers for the program, and there was concern surrounding the shift to using English as a medium of instruction (Habboush, 2009; Ridge et al., 2017). By 2015, the *Madares Al Ghad* program had been discontinued, and *Madares Al Ghad* schools were returned to the MOE public school model (Jonny, 2015).

In 2010, the Abu Dhabi School Model (ADSM)[9] was launched by ADEK in the emirate of Abu Dhabi. It included bilingual instruction in Arabic and English, and a heavy emphasis on science, technology, engineering, and mathematics (STEM) and twenty-first-century skills (Pennington, 2016a). However, this reform resulted in a decrease in the number of subjects offered to students, and, as of 2018, the success of the reform is yet to be determined. Not limited to the ADSM, curriculum reforms in the UAE, in general, have tended to fail to consider a wide range of offerings for students (Ridge et al., 2017).

More recently, as already mentioned, in 2017 the Emirati School Model was launched. In terms of curriculum, the Emirati School Model established joint responsibility between the MOE and ADEK for producing public school subject syllabi as well as the preparation and oversight of assessments across the nation (Langton, 2017). Additionally, as part of this new Model, English was proposed as the language of instruction for mathematics and science classes (Zaman, 2017). Although this English policy was already in practice for Abu Dhabi under the previous ADSM, it represented a new approach for Dubai and the northern emirates, where mathematics and science classes had previously been taught in Arabic under the MOE curriculum. However, as of July 2018, this has not been implemented and mathematics and science are still taught in Arabic in Dubai and the northern emirates.

Through these curriculum reforms, it is clear that the UAE has been actively seeking out new ways to improve the performance of students and to create what many would call a 'modern' education system. However, despite many curriculum changes, and billions of dollars spent, public school students in the UAE continue to perform poorly on international assessments and are still taught in teacher-centered classrooms (Reuters, 2013; Ridge, 2014; The National, 2017b). While UAE curriculum reforms have tended to emphasize improving teaching and the acquisition of English and STEM subjects, they often overlook important extracurricular subjects, such as the arts, music, and physical education. Although these courses are viewed as a low priority, or excluded from the curriculum at the secondary level, students benefit from such courses, and they tend to be given greater priority in Organisation for Economic Co-operation and Development (OECD) countries (Ridge et al., 2017). In terms of benefits, research has shown that the arts help develop capabilities that foster nonartistic skillsets, while physical education has been associated with higher student self-esteem, better attitudes towards school, greater social skills, and even improved cognitive development (Bailey, 2006; Catterall, 2002; Winner, Goldstein, & Vincent-Lancrin, 2013).

[9]Initially, this was called the Abu Dhabi 'New School Model.'

While curriculum changes have been designed to improve student outcomes, there have been additional initiatives launched in the UAE with the same aim. We discuss three of the most innovative initiatives below.

Education Innovation in the UAE

In this section, we highlight ways the country and individual emirates have made innovative actions to improve student engagement and learning. This has been done through incorporating technology in the classroom, providing technical and vocational education, and targeting student well-being and happiness, respectively.

Incorporating Technology into the Public School Classroom

Since the mid-1990s, the UAE has sought to be technologically up-to-date in the classroom or even ahead of the curve. In 1994, when the UAE Model Schools were launched, the initiative included the expansion of the use of technology in the classroom (Sarsar, 2007). Not long after, the first formal technology-focused education initiative, the Sheikh Mohammed Information Technology Education Project (ITEP) began in 2000 in order to increase student proficiency in the use of technology. According to the International Bureau of Education at the United Nations' Educational, Scientific and Cultural Organization, ITEP helped support the country's ambition "to provide a computer for every ten children in kindergarten, every five pupils in primary schools, every two students in preparatory schools" (UNESCO, 2011, p. 1). The project was initially rolled out in all UAE Model Schools and subsequently expanded to other public schools across the country. While the ITEP program is no longer ongoing, the presence of technology in schools remains a priority for the UAE government, with the UAE Vision 2021 aiming "for all schools, universities and students to be equipped with smart systems and devices as a basis for all teaching methods, projects, and research" (UAE Government, 2018, p. 1).

Continuing the momentum to bring increased access to information technology into classrooms, the Mohammed bin Rashid Smart Learning Programme was established in 2012 (Pennington, 2014). The initiative was designed to reform the learning environment through increasing the use of technology, specifically by providing all teachers and principals with laptops as well as every student in Grades 6–12 with tablets by 2019. While a report by Jigsaw Consult (2014) found that some teachers felt the program had a positive impact on their teaching and student learning, the evaluators stated that more time was necessary to determine the success and actual impact of the program on student learning outcomes. By 2016, however, the program had reached an estimated 202 schools, 7000 teachers, and 35,000 students, a larger number of schools and students than in many past reforms (Navdar, 2016). While the Mohammed bin Rashid Smart Learning Programme has reportedly been

scaled back, this initiative, along with the UAE Model Schools and ITEP, reflect the UAE's commitment to embrace education technology and innovative approaches to the education sector (The Cabinet of the United Arab Emirates, 2018; Chung, forthcoming).

Reimagining Technical and Vocational Education and Training

Along with its promotion of new technologies, the UAE has also placed an emphasis on technical and vocational education and training (TVET) through creating selective secondary schools that focus on STEM. In many ways, the emirate of Abu Dhabi pioneered the UAE's movement towards TVET in secondary education. A major step toward TVET was in 2010 when the Abu Dhabi Centre for Technical and Vocational Education and Training (ACTVET) was established. ACTVET was created to "increase the number of skilled Emirati youth in rewarding career paths and foster life-long learning and personal development" (Abu Dhabi Centre for Technical and Vocational Education and Training [ACTVET], 2015, p. 8). As part of its mandate, ACTVET oversees the Secondary Technical Schools (STS) and Applied Technology High Schools (ATHS)[10] for UAE nationals who meet the admission criteria. STS schools have a 3-year program that begins in Grade 10 and are geared toward students who seek a technical or vocational career after secondary school. They can be found across the country. The ATHS schools run a 3-year or 4-year program, depending on the age and grade level of students, and prepare students for a technical or vocational career, a career in medicine, or for higher education in STEM (Applied Technology High School [ATHS], 2016; Secondary Technical Schools [STS], 2016). While these specialized schools were initially established for male students, there are now both boys' and girls' campuses, depending on the location (ACTVET, 2015; Jones, 2012).

Both sets of schools are extremely well resourced, with Jones (2012) noting that ATHS schools have state-of-the-art facilities and have highly qualified expatriate staff, many from Europe and North America. Students are also paid. This combination of incentives and resources attracts many Emirati students, which in turn allows these schools to be highly selective and take only the best and brightest Emiratis. Research by Jones (2012) found that students in ATHS schools are highly motivated, with a greater willingness to take risks when they have a high chance of a reward, compared to public school students.

While initiatives such as STS and ATHS provide Emirati students with opportunities that they would likely not otherwise have, Jones (2012) and Ahmed (2012a) suggest that the students most likely to benefit from these schools are those who have parents who are more affluent. As such, these schools may be exacerbating existing academic divides rather than taking students who are perhaps not as academic but

[10] ATHS schools were founded in 2005. However, when ACTVET was established, these schools became part of its mandate.

good in more applied subjects. Overall, however, these schools offer high achieving students, especially boys, a chance to become highly skilled in STEM subjects and to become the engineers of the future.

Focusing on Well-being and Happiness

Finally, in alignment with the emirate of Dubai's and the country's ambition to become one of the world's happiest cities by 2021 (KHDA, 2018a), the emirate has incorporated aspects of this ambition into its education system. In 2016, the government appointed a Minister of State for Happiness, and the following year, KHDA formed a partnership with the Government of South Australia to launch the Dubai Student Wellbeing Census (DSWC) (Chew, 2016). The DSWC aims to examine "how students feel and think about their own wellbeing, happiness, quality of life[,] and engagement" and is part of a 5-year initiative (KHDA, 2018a, 2018b, p. 1). The KHDA has published some of the aggregate findings from the first Census and is using the findings to improve student well-being and examine school environments (KHDA, 2018a, 2018d). In particular, the KHDA is working to support "school leaders to make evidence-based plans and policies to further improve the wellbeing of students at their schools" (KHDA, 2018c). To achieve this goal, three 1-day workshops were held to help schools understand data in their DSWC school report and develop action plans to engage with teachers, administrators, and parents to implement interventions (Engelhardt & Lewkowicz, n.d.; KHDA, personal communication, 2018).[11]

The KHDA has also been creating additional opportunities for schools to collaborate and share best practices related to programs supporting student well-being (KHDA, personal communication, 2018). Going forward, the KHDA plans to expand its scope to also examine teachers' and other school staff's well-being levels (Engelhardt & Lewkowicz, n.d.; KHDA, personal communication, 2018). The belief behind this initiative is that, by focusing on the well-being of students and improving students' feelings about themselves and their schools, they will in turn achieve a higher level of academic performance. While there is no data yet to support this assumption, the initiative is interesting in that it is taking a different approach to tackling student achievement than has been tried in the past.

[11]The 2017 DSWC findings were quite positive overall, revealing that over 80% of students in Grades 6–8 report high or medium levels of happiness at schools (KHDA, 2018a). At the same time, the DSWC highlighted areas that schools may want to target moving forward. For example, the census found that only approximately half of students read for pleasure or play organized sports three times per week (KHDA, 2018a). Thus, schools may want to encourage students to participate in specific activities more regularly, depending on their unique school-level results.

Conclusion

Since the establishment of the MOE, access to quality education in the UAE has significantly increased. Moving forward, however, there are areas in the public education sector that could benefit from greater focus, including attracting and retaining more male Emiratis to teach in schools, continuing to support and diversify the national curriculum, and increasing communication between policymakers and other education stakeholders. The country would also benefit from a larger body of research on education, including on the lessons learned from education initiatives and on specific focus areas.

To begin, the implementation of *successful initiatives to recruit and retain male Emirati teachers* would strengthen the education sector in the UAE. While the shortage of national male teachers has received attention from academics and policymakers alike (Salama, 2012), there are still too few male Emiratis working in the sector. Thus, designing and enacting policies to attract and keep local males in the teaching force would strengthen the education sector in the long term. The shortage of male Emirati teachers and the reliance on expatriate teachers have important implications in terms of male role models, and it is likely contributing to the disengagement of Emirati boys compared to girls in the country's education system (Ridge, Shami, & Kippels, 2017).

Next, it is also important that *the public school curriculum is evaluated and tailored* to best meet the needs of society and the workplace. In the past, schools in the UAE were found to not provide students with a range of subjects wide enough to allow them to match their interests to their abilities (Ridge et al., 2017). Although the newest curriculum reforms being rolled out represent an effort to strengthen the national curriculum, these changes still do not address the need to offer extracurricular courses in the arts or vocational courses, such as design and welding. Courses like these have been shown to offer benefits to students that go far beyond the skills and knowledge they provide, as shown in the *Hands on Learning* program in Ras Al Khaimah (see Box 1). Going forward, new curricula should encompass a more diverse set of noncore courses, while also being thoroughly evaluated, with lessons learned applied, and the system being adjusted as needed.

Box 1. *Reengaging Boys in Education*

In the UAE, there is a pronounced reverse gender gap in the education sector, whereby Emirati and expatriate girls in the country surpass boys across a number of measures, including in terms of academic achievement (Ridge, 2014). On national and international assessments, girls consistently outperform boys across the country. For example, on the Programme for International Student Assessment (PISA) 2015, girls in the UAE performed better than boys across the three core subjects, with a 7-point difference in mathematics, 25-

point difference in science, and 50-point difference in reading (Organisation for Economic Co-operation and Development [OECD], 2015).

Aware that many boys are disengaged and underperforming in school, the Sheikh Saud bin Saqr Al Qasimi Foundation for Policy Research[12] launched the *Hands on Learning* (HOL) program in the UAE in 2014. HOL UAE is modeled on a successful program in Australia and was piloted in the emirate of Ras Al Khaimah to support and reengage male Emirati students. The program meets with male public school students 1 day a week to work on a range of projects, and it specifically aims to increase student engagement, keep 'at-risk' students in school, and improve student attitudes so that they can ultimately do better in school and in future employment.

While the projects that boys work on are vocational in nature, the aim of HOL UAE is not to focus on vocational education, but instead to help boys reengage in school so they can achieve their own goals. In particular, this is done through increasing attendance rates, building relationships, developing character, discouraging bullying, improving self-esteem, strengthening communication skills, and achieving success at school. Students in the HOL UAE program have reported that they have benefited from the program, particularly noting that they have gained practical skills, found enjoyment from learning new things, improved their English, increased their confidence and independence, and learned about the value of teamwork and cooperation. While the pilot has seen success in terms of student reengagement, there are some long-term challenges, particularly related to recruiting qualified staff, procuring funding, and convincing parents and teachers of the value and benefits of boys participating one full day each week.

Source: Adapted from Ridge, Kippels, & Chung (2017).

A desire to strengthen and centralize regulation of the education sector has fueled the recent reforms and mergers of various regulatory bodies in the UAE. However, *greater communication between education stakeholders* would increase buy-in of future policies, including those around curriculum, and ultimately support the implementation of new restructuring and reforms. Typically, teachers, administrators, and families have received short notice about nationwide government reforms,[13] without comprehensive explanations. This has resulted in short-term uncertainty and ambiguity around the rationale behind changes as well as shifting roles and responsibilities of education regulatory bodies and schools. One way to strengthen communication channels would be through increased collaboration and knowledge sharing between the MOE and emirate-level entities, such as Education Zones and schools, as they have direct ties to teachers and families. Seeking feedback from and co-planning implementation processes with the local entities would improve the ability to respond

[12]The authors are affiliated with the Al Qasimi Foundation.

[13]For example, only 2 months' notice was provided about the formation of co-educational public schools for Grade 1 students in 2018 (Dajani & Rizvi, 2018).

to and support MOE decisions. As there will inevitably be additional policy changes in the future, more advanced notice and greater transparency could help smooth transitions, while also providing ample time for teachers, administrators, families, and others to understand and appreciate new measures.

Finally, more *publicly available educational research* would benefit the sector, both in terms of programmatic evaluations and topics examined. To start with, more public research related to the successes and failures of education initiatives across the country (both at the state and institutional level) would benefit the education sector, allowing for lessons learned to be incorporated into future reforms and curriculum updates. Connecting research to practice would allow time and money to be saved, and the current practice of repackaging past reforms could be done away with. Through additional research and the sharing of data, reforms could be designed to improve the quality of teaching and learning, while also building upon work already done. Second, additional research is also needed on specific educational areas. For example, across the Middle East and North Africa, the state of early childhood education needs greater attention. If the UAE contributed to early childhood education research, it could strengthen its own system and also assist other countries in the region. In particular, more information about how to support inclusive early childhood policies and practices would be valuable since a strong early childhood foundation has long-lasting positive effects in terms of later academic achievement and attainment, especially for children from vulnerable backgrounds (Campbell, Pungello, Miller-Johnson, Burchinal, & Ramey, 2001; Reynolds, Temple, Roberson, & Mann, 2001).

While much has been achieved, there are still areas that need to be strengthened in order to better serve students and the country in its quest to become a knowledge-based economy and move away from a dependence on oil. A greater focus on certain areas, such as strengthening and diversifying the curriculum and more publicly available education data and research, could help ensure that all students reach their potential. By connecting research and practice with the policymaking process, it is likely that more sustainable and effective policies can be designed in order to bring the UAE closer to its ambition of having a first-rate education system that produces motivated and knowledgeable graduates.

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Chapter 4
Expanding the UAE's Higher Education Horizon: Path Toward a Sustainable Future

Fatima Badry

Abstract This chapter provides an overview of the development of higher education in the UAE and discusses how the digitalization and increased automation of world economies have led to calls for reinventing the university to respond to the profound shift in the type of skills needed for the future. In addition, soaring costs and reduced governments financial support are transforming HE into a private commodity rather than a public good. These developments have raised concerns about higher education effectiveness and affordability. This chapter addresses these two major global issues in the UAE context by reviewing the rapid evolution of UAE higher education and its sustainability in light of global, regional and local factors. Based on the competitive realities of the HE landscape locally, regionally and globally, and local demographic and socioeconomic factors, a more proactive national approach to international student recruitment is needed. The chapter also argues that the prevalent discourse on defining HE's role only as a producer of human resources for the economy is too reductionist and should not be the only basis for curricular reforms.

Introduction

The future of the traditional Western university model is the subject of heated debate across multiple disciplines as to its ability to prepare future generations for life in rapidly changing social and economic contexts. The digitalization and increased automation of world economies resulting from the disruptive technologies, referred to as the Fourth Industrial Revolution, are creating a profound shift in the type of skills needed in today's job market (Etzkowitz, Webster, Gebhardt, & Terra, 2000; Massy, 2016; World Economic Forum, 2017). At the same time, the increased demand for higher education (HE) worldwide and its soaring costs have led governments to reduce their financial support resulting in an increasing transformation of HE into a private commodity rather than a public good. These developments have raised concerns about the effectiveness and affordability of higher education. This chapter

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addresses these two major global issues in the UAE context by reviewing the rapid evolution of UAE higher education and its sustainability in light of global, regional, and local factors. It will suggest that based on the competitive realities of the HE landscape locally, regionally, and globally, a more proactive national approach to international student recruitment is needed, given the demographic and socioeconomic realities of the country and the region. It will also argue that the prevalent discourse of defining HE's role *only* as a producer of human resources for the economy is too reductionist and should not be the only basis for curricular reforms. To anchor the analysis of UAE tertiary education context, the chapter begins by briefly outlining some of the relevant arguments calling for a change in higher education globally.

Global Calls for Change in Higher Education

Critiques of tertiary education are global and come from many perspectives accusing it of "failing to meet the human capital needs of an allegedly ever more competitive, globalizing KBE [knowledge-based economy]" (Jessop, 2017, 855). It is generally accepted that the profound shifts in economic paradigms of the twenty-first-century call for universities to reinvent their curriculum, align it with the labor market, update their teaching approaches, and become cost-effective (Creative Destruction, 2014, Davies & Barnett, 2015; Etzkowitz, Webster, Gebhardt & Terra, 2000; Livingstone & Guile, 2012; OECD, 2008; Sum & Jessop, 2013; Trowler, 2004). There are many reasons given for this need to change. For example, according to Brown (1998), UK universities are faced with:

> rapid growth in student numbers, increased variability of student intakes, declining resources, concerns about quality of graduates, increased pressures for public accountability, concerns about the relevance to industry, increased competition from other countries and commercial interests, increased availability and reduced costs of networked media. (Brown, 1998, 31)

Many of the changes identified by Brown in the UK context above are common to traditional universities. There is a consensus that universities must be "reengineered" to become agents in the development of the "knowledge triangle" to enable societies to prosper. The knowledge triangle includes human capital, knowledge capital, and social capital (Cervantes, 2017). However, there is, as of yet, little agreement on how this reengineering is to be performed nor what priorities should be adopted by the university of the future as its mission (Brown, 1998; Massy, 2016; Trowler, 2004). In the past decade, many economists, politicians, and education policy specialists have claimed that the role of HE is to serve as the engine for human capital development to serve market needs (See Epstein, Boden, Deem, Rizvi, & Wright, 2008; Farrell & Fenwick, 2007 for a discussion of this perspective). Others have argued that university education must equally develop the social capital of the future citizen. For example, in his description of "the contribution of higher education to innovation systems," Cervantes (2017, 29) states that a "properly organized higher education

system can increase the efficiency of research activities, which in turn increases the stock of knowledge capital—as distinct from human capital—which is the basis for technological progress." Education is to become the motor of innovation that "contribute[s] to local economic development through so-called "third mission" activities or "community engagement." The third mission is a broad and loose concept usually used to include both the entrepreneurial and commercial nature of HEIs, and their social and cultural relevance, and knowledge transfer.

Although calls for reinventing the university are a global trend they are shaped by local imperatives and contexts. Local historical traditions, differences in cultural values, sociopolitical interests, and the type of bureaucracy may affect the implementation of a global trend differently in different contexts (Wodak & Fairclough, 2010). For example, Western educational institutions transplanted in the Gulf region must adjust their curriculum and content to cultural sensitivities. Their implementation is usually impacted by preuniversity education realities and sociopolitical forces on the ground.

The internationalization of higher education has also been a growing trend as part of globalization. Globalization has facilitated the movement of institutions and students across national boundaries and increased competition in attracting foreign students to mitigate the financial crunches universities are experiencing (Vedder, 2018). Internationalization can be achieved either through transplanting branch campuses overseas or recruiting foreign students to the home campus. Interestingly, political developments such as Brexit, Trumpism, and the ascendance of nationalist and anti-immigration movements in Europe and the US, are shifting the poles of attraction from the West to other regions in Asia, particularly for students in that continent (Altbach & de Wit, 2018). As will be discussed below, in the first stage of developing its higher education, the UAE experienced the first kind of internationalization by inviting many foreign institutions to establish their branch campuses in specifically designed educational free zones (Badry &Willoughby, 2016). In its second phase, the future and viability of higher education in the UAE will depend not only on improving its quality but also on its ability to attract a sufficient number of international students to offset the oversupply of tertiary institutions operating in the country (Wilkins, 2010).

Evolution of Higher Education in the UAE

UAE higher education is a relatively recent development that began soon after the establishment of the UAE in 1971 as a federation of seven emirates in the Arabian Gulf region. Within the past five decades, the UAE educational system has achieved spectacular advances with literacy rates jumping from 10% in the 1960s to over 93% (UNICEF, 2013), from no tertiary education available in the country prior to 1976 to

around 180 tertiary establishments.[1] The explosion of higher education institutions has been particularly remarkable in the major cities of the UAE, Abu Dhabi, Dubai, and Sharjah, and to a lesser extent in Ras Al Khaimah (RAK). Today the UAE is considered the "largest higher education hub of international branch campuses globally" (Wilkins, 2010, 390). The following brief historical review identifies two major stages in the evolution of UAE higher education.

The Early Stages: 1976–2008

The explosion of tertiary institutions started around the end of the last century and was fueled by increased demand following the rapid growth in the number of Emirati high school graduates and the vertiginous increase in the population of expatriate residents attracted to the UAE to serve its extraordinarily fast-growing economy. The increase in demand was also in part encouraged by external factors in the aftermath of the September 11, 2001 events. The negative atmosphere and attitudes toward Middle Eastern students in the US and the West, in general, led many Middle Eastern students studying abroad to feel unwelcome. Even those who still wanted to study in Western universities were unable to do so due to draconian measures to obtain US or European visas. The UAE's new universities offered an attractive alternative for Gulf and Middle Eastern students. For the purpose of this overview, HE institutions are described under two major categories: Federal and nonfederal tertiary institutions. The latter include Emirate-funded institutions, privately funded institutions and branch campuses of international universities.

Federally Funded HEIs

The first federal university, the UAE University (UAEU), was established in 1976 to educate UAE citizens. Although UAEU initially followed Arab educational systems, two decades later UAEU and the majority of tertiary institutions in the UAE are based on Western university systems, particularly the US and UK models, reputed to have succeeded in advancing knowledge and research throughout the past centuries. The UAEU comprises nine colleges offering 52 undergraduate degree programs, 31 masters degrees, and 4 doctorate programs to around 14,000 students (UAEU, 2018). The second federal tertiary institution, the Higher Colleges of Technology system (HCT) was founded in 1988 and was designed to teach Emirati high school graduates, job-related skills in Business, Health, Applied Technology, and Science fields in four colleges. Today, HCT offerings have expanded beyond the applied diploma level. Students can pursue degrees at the bachelor and master's levels in 6 academic divisions and 72 academic programs. HCT has the largest student body in the UAE with a student body of over 22,000 in 17 campuses across the UAE (HCT Factbook

[1]These are estimations based on various databases published by several official local and federal government websites. Given the fluctuations characteristic of the HE landscape in the UAE, they may change from one year to the next.

2017–18, 2018). The third federal tertiary institution, Zayed University (ZU) opened its doors 10 years later in 1998. Today, it has two campuses, one in Abu Dhabi and the other in Dubai, with a total student body of close to 9500. ZU has 7 colleges offering 19 bachelors degree programs and several master's degrees (ZU Factbook, 2016–17, 2018). The National Defense College and the Emirates Diplomatic Academy were added to the federal institutions' landscape in 2013 and 2014, respectively (Nasir, 2017a).

Around 41% of Emirati students attend the federal institutions with the largest percentage (50%) in the HCT system, 33% in UAEU and 17% in ZU (KHDA, 2014). Federal institutions are tuition free for UAE nationals. The federal government also provides generous scholarships to UAE nationals for study elsewhere. All federal institutions were initially open to UAE citizens only but have recently admitted a limited number of other Arab students. They are gender segregated by campus and serve a predominantly female student body.[2] Despite their significant growth, however, federal institutions were unable to satisfy the demand for tertiary education both in terms of quantity and quality to a fast-growing young population. Today 47% of all Emirati students attend nonfederal tertiary institutions in the UAE (Salama, 2016).

Nonfederal HEIs

It is difficult to categorize nonfederal institutions as private/public or for-profit/non-profit universities or even branch and independent campuses as many so-called private institutions and branch campuses receive substantial financial support and allowances from the Emirate in which they are located. For example, the Emirate of Abu Dhabi heavily subsidizes international branch campuses such as New York University Abu Dhabi (NYUAD) and the Sorbonne, and fully funds universities such as Khalifa University. The ruler of the Emirate of Sharjah financed the establishment of the institutions in Sharjah University City, such as the American University of Sharjah and the University of Sharjah. The Sharjah municipality continues to provide services to the compound. Funding these types of institutions allows the funding Emirate to have control over the institution and enhances its image. All programs offered by non-branch institutions have to be accredited by the Commission on Academic Accreditation (CAA) a division of the Ministry of Higher Education and Scientific Research.

The Emirate of Dubai adopted a more laissez-faire approach by creating several free zone educational areas, where institutions are invited to set up their campuses. Institutions in free zones receive no local government funding but have several financial incentives. Branch campuses from accredited international universities that are established in free zones need not be licensed by the Knowledge and Human Development Agency (KHDA), a body set up by the Dubai government to license and oversee education in the Emirate. Dubai is also home to several privately owned universities such as Al Ghurair University, Dubai University or the American University

[2]ZU Dubai campus has gone back to an all-female undergraduate student body after a temporary and limited acceptance of males and due to space limitations it needs to maintain the genders in segregated spaces. Graduate classes are mixed on ZU campuses.

of Dubai (see Badry & Willoughby, 2016 for a detailed discussion and classification of nonfederal tertiary institutions).

Although the first private university dates back to 1993 with the opening of Wollongong University in Dubai, the explosion in private higher education really took off in the 1997–98 academic year. In 2017, Dubai alone counted over 62 institutions of higher learning from only four in 2002 (KHDA, 2017). Thirty-nine of these are in free zones and 23 are outside the free zones. Institutions implanted in Dubai are branch campuses from 12 countries including Australia, India, Pakistan, Iran, the United Kingdom, and the United States (KHDA, 2017).

The expansion is not limited to Dubai however. Other Emirates have also experienced growth. In Sharjah, the University of Sharjah has the largest number of enrolled students of any nonfederal university in the UAE with over 12, 000, and the American University of Sharjah had over 5000 students in 2017.[3] In Abu Dhabi, there are over 18 institutes, colleges, and universities that are classified as private by the Abu Dhabi Educational Council (ADEC) (Abu Dhabi Digital). The Emirate of Ras Al Khaimah has also witnessed the opening of five universities in the past two decades. Today, there are around 180 tertiary institutions in the UAE, 79 of which are accredited by the CAA (CAA). The focus of this chapter, however, is on the nonfederal institutions in the Emirate of Dubai, which has the largest number of both branch campuses and privately owned tertiary institutions.

Stage 2: 2008 to Present: Reality Checks

Although the educational landscape experienced a slowdown in the aftermath of the economic crisis of 2008, it continued to expand and several institutions were added to the HE landscape. However, by 2015–16 the HE market began to experience a crisis of a new kind as student enrollment began to taper off. Today, many tertiary institutions are facing lower enrollment percentages ranging from 5 to 30%.[4] Some are offering financial incentives and/or shorter degree programs to cope with this crisis. Attrition coupled with a drop in student enrolment numbers is a serious threat for institutions that depend on tuition fees for their financial sustainability. A crowded marketplace has increased competition and institutions are finding it difficult to differentiate themselves. In addition, "having to compete on price is not something that many of them would previously have thought they would end up doing" when they were attracted to Dubai (Wilkins, 2010, 395). Anecdotal evidence suggests that students are taking advantage of the competition between institutions by transferring to other institutions in search of lower costs and/or shorter length of study. Others are going abroad, particularly for graduate programs.

[3]These figures are collected from each university's website in Spring 2018.

[4]Very few institutions publish their enrolment and retention figures. Getting official figures by contacting institutions directly was not successful either. These estimates are obtained from personal communications with administrators in different universities.

There are several possible explanations for this new crisis. First, the mushrooming of HEIs has led to fierce competition within the UAE. Second, although the UAE was a precursor in the expansion of higher education in the region, all countries of the Gulf Cooperation Council (GCC), a regional group including Bahrain, Kuwait, Oman, Qatar, UAE, and Saudi Arabia, have followed suit and expanded their public and private higher education systems. Consequently, there is less of a need for GCC students to travel to the UAE for their studies. Third, the political climate in the region (since the 2011 Arab Spring) has made it increasingly difficult for students from certain countries to obtain student visas to enter the UAE. Ironically, it was the 9/11/2001 events and their aftermath in the US that had contributed to the UAE's attractiveness as an alternative university destination for many other Middle Eastern and South Asian students who could no longer attend American universities in the US. The convergence of these factors points to the need to rethink student recruitment strategies for UAE private universities today, given that government subsidies are diminishing and that student tuition fees, which are on the rise, are the main source of revenue for private institutions.

Education as the Engine of Growth

The UAE has burst into the world stage as an emergent nation thanks to its extraordinary developmental growth in its very short history as a modern state beginning in 1971. The Global Competitiveness Index (2017–2018) shows a continuous improved standing in global competitiveness rankings. In 2017, the UAE was ranked 17 out of the 137 countries included in the report. This rank makes it the leader in the MENA region. According to the report, the UAE economy has shown resilience and has been able to weather the drop in oil prices as a result of its diversification strategies. Nonetheless, the report suggests that in order for the UAE to sustain this trend it needs "to speed up progress in terms of spreading the latest digital technologies (36th) and upgrading education (36th)" (The Global Competitiveness Index 2017–2018, 32). From the start, education was considered the engine of growth and was expected to be the driving force of Emiratization, i.e., nationalization of the labor force. It was expected that young Emirati graduates would replace expatriate professionals in all sectors of the economy (Olarte-ulherr, 2015). This goal has remained elusive so far (Alshaal, 2018; Salama, 2013).

Undeniably, the country's educational system can boast about its achievements in many respects such as closing the gender gap, achieving high literacy rates, and expanding its higher education landscape. The UAE is among the countries enjoying one of the highest percentages of high school graduates enrolling in tertiary education.

However, despite these accomplishments unemployment rates among UAE youth are troublesome (over 11%).[5] Despite several efforts by the government aimed at encouraging nationals to seek employment in the private sectors such as banking, hospitality, and other service sectors, "over 70% of employed UAE nationals work in the public sector including defence and security, government and oil and gas" (British Council, 2017, 17). Young Emirati graduates prefer government employment because of several advantages such as shorter hours, longer holidays, higher pay, retirement benefits, and routine promotions not based on performance (Nasir, 2017b). A major reason usually put forward to justify the limited success of the Emiratization project is the so-called misalignment of education outcomes with the current labor market. Employers claim that university graduates are not well prepared for work in today's labor market and parents are not satisfied with the returns on investment in their children's university education (Spraggon & Bodolica, 2014). Possibly, another factor behind the limited success of Emiratization is the social perceptions and attitudes about the desired types of jobs that carry high social status and prestige among the local population.

The successive reforms implemented so far in response to the labor market needs have not yielded the desired outcomes in part due to their narrow vision of curricular issues that are not inscribed within the local economic and social contexts and have focused instead on standardization and regulation (Badry & Willoughby, 2016). The lack of congruence between economic and education planning strategies is likely a major factor in the misalignment between education outcomes and the labor market. While the largest sectors of the economy such as construction require mostly low- to mid-skilled labor, there has not been sufficient focus on vocational training targeting growth sectors of the UAE economy. Even the HCT system, which started as 2-year vocational training programs, has morphed into 4-year bachelor and master granting colleges. In the federal institutions and the nonfederal sector, many of the new small tertiary establishments in Dubai offer degrees in business, accounting, and leadership to serve sectors such as banking and finance. Such are precisely the types of jobs threatened with disappearance due to their automation and the move toward the Dubai Smart City 2021 vision where most services will be automated (Smart Dubai 2021).[6]

[5]This figure is somewhat misleading as it does not take into account those who are not seeking employment, such as females mainly in the northern Emirates. Neither does it consider many unemployed Emiratis who do not seek work because of the kafala and licensing incomes. Kafala is a sponsorship system widely used in the Gulf, where expatriate companies must have a national partner who is paid for his sponsorship.

[6]This project is officially described in the city's portals in the following way: "Smart Dubai 2021: Preparing Dubai to embrace the future now" envisions a city where all its resources are optimised for maximum efficiency, where services are integrated seamlessly into daily life, where we protect both our people and information—creating the most enriched life and business experience possible for all." https://2021.smartdubai.ae/.

A Question of Numbers

The higher education sector in the UAE started to show imbalances between supply and demand in both public and private sectors by 2008, when it became clear that the local pool of potential students is too small for the number of tertiary institutions established in the country (Ashour & Kauser, 2016; Wilkins, 2010). Most of the 79 accredited institutions outside the free zones regulated by the Commission on Academic Accreditation (CAA), had less than 1000 students and many had less than 100 (CAA). Such low enrollments led to closures, as is the case of the international branch campus of George Mason University in Ras Al Khaimah in 2009. Other institutions have had to revise their targets downward to remain operational (Wilkins, 2010). In the face of such imbalance between supply and demand, some foreign private universities that are already established in the UAE have called on the authorities to take a more active role in providing a regulatory environment that ensures the number of HE providers *is right* (Swan, 2016a; Wilkins, 2010). This trend continues today, which raises questions about the effectiveness of the current policies of an open-door laissez-faire policy in the higher education market, particularly in Dubai. Many nonfederal HEIs that depend primarily on tuition fees and/or waning local government support for their revenues are facing difficult decisions regarding their sustainability.

The issue of dwindling revenues from student fees and decreasing government subsidies for higher education is not new, nor particular to any region. However, despite the commonality of the problem, different sociopolitical and economic factors in each context call for different solutions. Many universities in the West are struggling, and different institutions have adopted different approaches to remain afloat. For example, one solution adopted by some has been to reduce programs by dropping Humanities, Arts, and Social Sciences majors altogether (Kelderman, 2018). These calls are also heard in the UAE and many smaller tertiary institutions limit their offerings to business, information technology, or engineering.

Another approach has been for universities worldwide to increase their efforts at recruiting international students, whose high fees generally offset the costs for their citizens. In the UAE, two factors are particularly relevant to understand the need for recruiting international students. First, the demographic factor: the UAE population is around 10 million people with 80% being expatriates who have no permanent right of abode and whose residency is tied to their employment.[7] As a result, this group of residents is characterized by high fluctuation and uncertainty depending on economic and political circumstances. It was the expansion of this group that fueled the explosion of higher education in its early stages since the national population is less than 20% and over half of UAE students attend federal institutions free of charge or obtain scholarships to study abroad.

Clearly, Dubai's HEIs like many other sectors of the economy (e.g., real estate) are heavily dependent on expatriates, who have opted to stay in the UAE because

[7]A high proportion of these are unskilled laborers from the Indian subcontinent. They are not allowed to sponsor their families as residents of the UAE.

of its relative social openness, its economic prosperity, and high standards of living (British Council, 2017). Another source of student recruitment in the past decade had been from neighboring countries including the GCC, Iran, and Southeast Asia. The fact that the UAE was the first Gulf country to embark on a rapid expansion of its higher education landscape gave it an advantage and it became an attractive destination for Gulf students particularly in the aftermath of 9/11/2001 due to its relative social openness and offering a certain level of cultural familiarity as an Arab/Muslim country. There is also additional hope for future employment in the country after graduation (Hanif, 2016).

However, recent developments such as skyrocketing rises in the cost of living, the introduction of value-added tax (VAT), and the sociopolitical anxieties in the tense Middle East climate may jeopardize the attractiveness of a country that has recently created a Happiness ministerial position and aspires to become the happiest country on earth (KHDA, 2017; Smart Dubai, 2021, n.d). A comparison of two consecutive documents by the Knowledge and Human Development Authority (KHDA) shows a decrease in the number of students traveling to the UAE to study. In 2015/16, 33% of enrolled students were on student visas (KHDA, 2016). Of these, Indians made up 30% followed by Egyptians at 8%, Pakistanis and Nigerians at 6%, and Jordanians at 5% (KHDA, 2016). By the academic year 2016–17, the overall percentage had dropped to 23% (KHDA, 2017). The 2017 KHDA document also reports an annual growth of 4.5% in student enrolment in private higher education in the past 5 years of whom 92% are UAE residents. As these figures suggest, student recruitment in the UAE relies heavily on the internal market, mainly on children of expatriates working and residing in the UAE.

The advantages that made the UAE an education hub in the first decade of the twenty-first century have begun to weaken as other GCC countries have also expanded their tertiary educational offerings. Asian countries such as Malaysia and Singapore are now aiming to attract students from the region where demand is not being met. Morgan (2016) reports that there are more than 600 million young people in South Asia under the age of 18, and India will have "the largest university age group cohort in the world" as early as 2020. Morgan goes on to report that "[w]hile an estimated 30 million or more are enrolled in tertiary education systems across the region, the unmet demand is estimated at three to four times this number" (Morgan, 2016).

Becoming a Regional Hub

Student mobility across national borders has been accelerated by globalization. Worldwide, over 3.3 million students are studying outside their own country (Bhandari & Blumenthal 2011). While the US, the UK, Canada, and Australia have historically been a top destination for foreign students from all over the world, recent xenophobic sentiments there are helping reorient student mobility toward new destinations such as China, Singapore, and Malaysia. These countries are capitalizing on the unmet needs for higher education in Asia and even Africa and "had a combined share

of approximately 12 per cent of the global student market" by 2005 (Agarwal, 2011, 52). Income from foreign student tuition is not negligible. Bhandari and Blumenthal (2011, 1) cite reports showing that "about 450,000 Indian students migrate overseas and spend US$13 billion each year on acquiring a higher education abroad." To attract foreign students from Asia, in 2009 Singapore set up the Singapore International Educational Agency (SIEA) to recruit and provide assistance to incoming students by helping them not only with university formalities, visas, accommodation, and transportation matters, but also to promote Singapore internationally (SIEA, 2009). These efforts have been fruitful and, although accurate up-to-date statistics are hard to get, Singapore's top 4 universities have a ratio of international students ranging between 17 and 30% of the total number of enrolled students.[8] Malaysia, China, and even Japan have also set ambitious targets for attracting international students by 2020 (Bhandari & Blumenthal 2011). According to Gürüz (2011), by 2025, 56% of the global demand for higher education will come from China, India, Malaysia, and Korea.

The future of HE in the UAE may depend on succeeding in joining this internationalization phenomenon. Over the past two decades, the expansion of HE was focused on attracting and establishing institutions to meet existing local demand. This short- and medium-term goal has essentially been met. Today, the existing student pool is no longer enough to sustain this expansion and a concerted and long-term plan is needed at the national level to benefit from student mobility, particularly from Asia. Students who leave their country to study abroad are motivated by a multitude of factors such as the insufficient capacity of national higher education at home, the belief that study abroad is enriching, and enhances career opportunities. Quality of education and its value for future prospects is certainly the major consideration in choosing where to study, but an institution that facilitates rich experiences and interactions inside and outside has added benefits. Other factors influencing students and parents' choices include geographical considerations, cultural and historical ties between the host and home countries, and cost of living (Bhandari & Blumenthal, 2011, 8). Like Singapore, the UAE has the strategic location for becoming a pole of attraction for students from Asia and the Middle East. Dubai, in particular, is a well-known brand, a global and a forward-looking city that offers a wide range of employment opportunities to university graduates (KHDA, 2017). Its multinational, multicultural, and multilingual atmosphere, and its strategic location make it ideal for the global citizens of today.

In order to attract international students, policymakers at Emirate and federal levels must coordinate their strategies in planning and regulating the educational landscape. The establishment of new institutions must be based on criteria such as complementarity of the programs being offered and their alignment with planned social and economic development (Swan, 2017). The government may also establish

[8] It is worth noting here that the American University of Sharjah in the UAE is listed by *Times Higher Education* as the top university worldwide for its number of international students with 83% of students being listed as international students (https://www.timeshighereducation.com/student/best-universities/international-student-table-2018-top-200-universities). However, this ratio is based on the nationality of students, most of whom are the children of expatriate residents of the UAE and do not come especially to study in the UAE.

or encourage the establishment of an agency similar to the Singapore International Education Agency that would be responsible for positioning the UAE as an attractive international higher education destination and developing the UAE brand in higher education more effectively. Such an agency would facilitate the recruiting of students and facilitate various procedures, from choosing an institution to facilitating visas applications. Lowering residency visa costs, and facilitating administrative and visa procedures would be welcome steps. The UAE government's latest decision to ease visa regulations for graduates is an encouraging sign in that direction (Rizvi, 2018).

Undoubtedly though, one of the most important factors influencing the choice of an institution is the quality of education being offered. Clearly, universities must demonstrate their commitment to academic excellence in order to attract and retain students in an increasingly competitive market. For UAE higher education to be competitive globally, universities should offer an open space that allows for creativity, innovation, and motivation in learning, teaching, and research. One way the UAE government attempts to improve the quality of HE is by increasing its control and regulation in teaching (Badry & Willoughby, 2016). The Ministry of Higher Education and Scientific Research, through the CAA, has established accreditation standards to be met by all private institutions that are not branch campuses in free zones. In addition, the Ministry introduced a Qualifications Framework for the Emirates in 2012 that is "designed to be the single structure through which all qualifications in the UAE can be described and compared, enabling the relationship between all qualifications to be defined" (CAA, 2012, 2). This regulatory agency expects institutions to require faculty to provide evidence of their teaching and assessment techniques on a regular basis. Faculty feel that these latest trends in assessment and accreditation may lead to more uniformity in teaching and leave less room for innovative approaches that are conducive to a more learner-centered approach. In addition, student evaluations of teaching are sometimes misconstrued as measures of teaching when they are actually normative assessments of an instructor's conformity with the consumerist desires of students (Cain, Romanelli & Smith, 2012). Through these evaluations, academic authority is transferred from professors to students, ultimately resulting in a higher education that caters to student demands and may affect faculty motivation negatively. Treating education as a commodity and adopting business methods of instant gratification on returns has serious pitfalls. While market values have become the norm governing human actions it is important to remember that "universities exist to produce value rather than profit, …[even if they] must wheel and deal in the marketplace" (Massy, 2016, p. 19). Prioritizing consumer (student) satisfaction, in the end, negatively impacts the quality of learning and teaching because students tend to develop an attitude of entitlement with "the underlying belief that as consumers, they should be catered to, and given the opportunity to participate in the education process according to their preferences" (Cain et al., 2012, 189). In this paradigm, faculty tend to cater to student preferences and student evaluations become the weapon of choice in affecting what is being learned more than the content of the curriculum.

The Twenty-First-Century Curriculum

A dominant discourse for change in higher education curricula calls for a focus on skill sets required for economic development. Reports and documents published by agencies, economists, and newspapers are rife with complaints about the present state of higher education as failing to equip students with the skills needed by businesses in the labor market (Spraggon & Bodolica, 2014). They also note the need for developing other soft skills such as critical thinking, communication, and English. A whitepaper recently published by the British Council titled "Future skills supporting the UAE future workforce" (British Council, 2017, 11) identifies the lacunae in graduates which, according to interviewed business executives, are the "lack of technical skills (mainly STEM related) and essential skills like analytical capabilities, communication, core technology skills, critical thinking, collaboration and working in teams, and the English language." (British Council, 2017, 11). In an interview with the National newspaper, an Abu Dhabi-based and government-funded newspaper, the Dean of the College of Graduate Studies from UAEU claims that "moving away from classical subjects such as math and physics towards modern adaptations, applicable to careers, such as nuclear physics or astrophysics, was vital for today's students" (Swan, 2017). Others have decried the insufficient attention and selection of STEM disciplines by students in favor of easier subjects (Arezki & Ghanem, 2018).

There is, a general consensus, however, that the development of critical thinking is essential to the citizen of the future as it is the basis for creativity and innovation, two essential competencies in the advancement of knowledge. In a discussion of the concept of critical thinking, Davies and Barnett (2015, 8) suggest that critical thinking in higher education must be understood as a composite of skills, judgments, and dispositions. Not only do students need to develop skills such as argumentation, induction, deduction, and inferencing but they also need to be able to make judgments about ideas and take action. From a critical pedagogy perspective, "critical thinking is more about changing matters, and here changing society as much as if not more than individual students" (Davies & Barnett, 2015, 9). Ten Dam and Volman (cited in Davies and Barnett, 2015, 9) argue that learning to think critically should—in part at least—be conceptualized as "the acquisition of the competence to participate critically in the communities and social practices of which a person is a member."

It is important to point out, though, that acquisition of these competencies is a developmental process that needs to begin early on in one's educational journey. Blaming higher education for shortcomings in their development ignores the lack of adequate preparation at the preuniversity education levels (Andrews, 2015, 50) and requires a comprehensive and all-encompassing view of education reform. Reinventing the university cannot be accomplished in isolation from reinventing the whole educational system, if the goal is to *educate* competent creative, innovators and lifelong learners. Moreover, curricular reforms likely to achieve this goal cannot be limited to a focus on technical skills and STEM. Curricular reforms must be comprehensive and focus on the development of soft skills necessary for lifelong learning by empowering both faculty and students. As Trowler (2004, 9) remarks:

> Today, the dangers to academic professionalism are many, and sometimes it is difficult to distinguish the forces which may genuinely operate for the general good, assuring and enhancing quality, empowering students, increasing social mobility and equity, and those which diminish higher education, disempower and degrade the working conditions of professionals, impoverish their work and in the end leave students without the range of experiences and qualities that higher education has traditionally sought to imbue.

Conclusion

Redressing imbalances and achieving sustainability in the future may require meaningful changes in UAE education policy at both national and sectoral levels. Nationwide, regulatory agencies can better contribute to the quality of HE by stressing innovation and creativity in assessing teaching rather than conformity and uniformity. At the macro level ensuring complementarity between institutions rather than competitiveness and duplication of the programs being offered across the education landscape may expand its horizon. The existing laissez-faire approach to the educational market has outlived its benefits and needs to give way to a more cohesive and regulatory system nationwide (Swan, 2016b). There is also a need for a national policy and campaign that promotes UAE higher education and facilitates international student recruitment, particularly from the Indian Subcontinent where there is clear unmet demand. Thanks to its financial resources, its development and its geographic position, the UAE can achieve the regional/global educational hub status it aspires to, and compete with the likes of Singapore and Malaysia (Agarwal, 2011; British Council, 2017; KHDA, 2017).

At the sectorial level, it is clear that a reengineering of the university is needed to respond to the profound social and economic transformations resulting from the disruptive technologies of the twenty-first century. However, history shows that universities thrive when they offer both faculty and students an open space for the development of competencies such as critical thinking, creativity, and innovation. The reductionist approach calling for curricular reforms focusing on universities as providers of human resources for the current labor market overlooks the importance of the knowledge triangle in equipping graduates with *knowledge* that are necessary to function effectively in a rapidly changing and, to a certain extent, unpredictable future.

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Chapter 5
Arabic Language Education in the UAE: Choosing the Right Drivers

Hanada Taha Thomure

Abstract This chapter describes the many initiatives that have been spearheaded by the United Arab Emirates (UAE) in an effort to develop the teaching and learning of Arabic in the country. Although there has been unprecedented attention given to Arabic language education in the decade up to 2018, including an Arabic language charter, a reading law, the Arabic reading challenge, the Arabic for life report, and the Arabic award to list just a few, private and public schools are still having some challenges in bringing best practice to the Arabic language classrooms with students still underperforming. The UAE vision and initiatives set in place to develop Arabic language education are to be applauded; however, it is the direction of that vision that needs to be adjusted to focus mainly on teacher preparation and teacher and school leadership training. Teachers and school leaders are the most important piece in the educational fabric and without ensuring that they receive the best preparation and continuous and meaningful training and support throughout their careers, then these initiatives will have little impact on Arabic language education outcomes.

Introduction

Over the years, the UAE has experimented with many school models and many approaches to develop its educational system and elevate the status of Arabic language education. Formal schooling started in 1972 with the establishment of the Ministry of Education (MOE), and although the journey has been a short one compared to other nations, it has been a very ambitious and serious one. Over the past decade, the UAE has gone through several iterations of school models and schools of thought on teaching and learning including introducing bilingual education in the early years, to introducing just English language as a world language in the early years with all other subjects taught in the mother tongue (Arabic). The country has also experimented with standards-based approach, and more recently with a light version of the literature-based approach where many of the texts included in the Ara-

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bic language curriculum for the 2018 academic year were licensed from authentic Arabic children's literature. The MOE has also experimented with an array of specialized programs introduced in schools including the integration of technology and stem labs, the restructuring of leadership and teacher supervision, and the upscaling of facilities and resources, as well as the recent introduction of standardized testing at the national level (Litz & Scott, 2017).

This chapter will discuss challenges that characterize the teaching of Arabic language in the UAE today and will highlight some of the initiatives and policies introduced by the Emirati government in order to overcome some of those challenges.

Student Achievement in Arabic Language Standardized Tests

In this section, UAE students' achievement in Arabic language standardized tests, namely, PIRLS (Progress in International Literacy Study) and EMSA (External Measurement of Student Achievement), will be discussed. Results on the PIRLS test will be further compared to other Arab countries who took that test.

The Progress in International Reading Literacy Study (PIRLS)

A standardized test of international impact and reputation is the Progress in International Reading Literacy Study (PIRLS). PIRLS possibly qualifies as the most important study of literacy amongst young students around the world. The purpose of PIRLS is to measure students' ability to read in their native language, and to comprehend both literary and informational texts (Mullis, Martin, Foy, & Drucker, 2012; Taha, 2017a). In the UAE, students who study through the medium of Arabic take the Arabic language PIRLS, and students studying in English medium schools take the test in English. Data that are published and available to the public represent the combined data from the Arabic and English PIRLS.

Results from the 2011 PIRLS test show that out of the 45 countries participating in the test, Morocco was ranked 45th, Oman 42nd, Saudi Arabia 41st, Qatar 37th, and United Arab Emirates 34th (Mullis et al., 2012). Although the UAE outranked all Arab countries that took the PIRLS 2011, it, however, still performed below the international scale average of 500 (Mullis et al., 2012). The latest PIRLS test was administered in 2016. Fifty-one countries took the test, including eight Arabic speaking countries. The UAE came in the 43rd rank ahead of all the other Arab countries who took it (Bahrain 44th place, Qatar 45th, Oman 47th, Kuwait 48th, Morocco 49th, Egypt 50th), with a score of 450 which is 11 points higher than the 2011 score (PIRLS, 2016). This is a commendable improvement for the UAE;

however, measures in modernizing Arabic language education need to continue if the country is to reach the international average of 500 points and beyond.

The Abu Dhabi External Measurement of Student Achievement (EMSA)

In 2016, 105,665 students in grades 3–12 (in private and public schools) in Abu Dhabi, Al Ain, and Gharbiyyah took part in the Abu Dhabi External Measurement of Student Achievement (EMSA). The EMSA test has been designed within the UAE to provide data to a wide variety of stakeholders on students' achievement in languages, science, and mathematics, according to the former Abu Dhabi Education Council [ADEC] (2016).

Results from the 2016 EMSA Arabic reading test show that students in grades 3–12 displayed proficiency in retrieving literal information and finding information in texts—these are memory and recall skills that involve finding direct and key words or phrases in texts (Abu Dhabi Education Council [ADEC], 2016). However, students seemed to be challenged by items that require higher order thinking skills, including interpretation, inference, understanding meaning, and items that require students to analyze and reflect on longer texts with questions focused on ideas late in the passage—these types of questions test understanding rather than memory or local recall skills (Abu Dhabi Education Council [ADEC], 2016). Girls consistently outperformed boys in Arabic reading by 1 year of learning across all grades. This gap between boys and girls does not narrow as students develop toward secondary school (Abu Dhabi Education Council [ADEC], 2016). Generally, results in Arabic reading did not show the expected rate of growth in the later years of schooling (Abu Dhabi Education Council [ADEC], 2016).

Arabic as a Diglossic Language

The Arabic language is a diglossic language (Aldannan, 2010; AlMousa, 2007; Ferguson, 1959, 1991; Obeid, 2010) that has many regional spoken dialects and a higher level written standardized variety. The diglossic nature of Arabic can be represented on a continuum with Classical Arabic, the language of the Qur'an, Hadith, and Classical poetry set at one end, and probably the uneducated dialects and vernaculars on the other end, with Modern Standard Arabic (MSA), educated dialects, and enlightened dialects all spread in between (Kaye, 1994). Unfortunately, this diglossic feature, which is a point of great strength, distinction, and richness, has been overshadowed by certain practices in Arabic language education in the past seven decades, where diglossia was dealt with as a weakness rather than a strength (Shousha, 2014). Most children come to school having acquired one variety or

dialect of Arabic, and that is the one they have heard at home from parents and family members. At school, the language of textbooks, children's literature, and supposedly instruction are all in MSA, which is the standardized variety of Arabic used in media, literature, and all formal and written communication. Feitelson, Goldstein, Iraqi, and Share (1993) and Abu-Rabia (2000) tested the causal links between MSA and dialects in children. They found that the more children's literature is read early on to children, the easier their move from dialects to MSA becomes. However, the Arabic language is usually taught in a rigid way that is focused on grammar and accuracy. This has stifled the ability of Arabic language learners to use it as a tool for science, creative work, modern terminologies, innovative ideas, playfulness, inquiry, and laughter (Taha-Thomure, 2008). Students are consistently corrected on the spot in classrooms and are taught that one cannot make a mistake when reading or writing in MSA, and that invented spelling and making words up are unacceptable practices (Taha-Thomure, 2008). In class, most teachers observed use dialects to explain language features, which presents yet another level of complication toward helping students make the move from dialect to MSA, and close the gap between them (Taha, 2017a; Taha-Thomure, 2008). As a result, Arabic tends to be seen as the least-liked subject for students in schools, and speaking, reading, and writing in MSA are the last things they want to do, and actually are able to do (AlZeny, 2016; Arabic for Life, 2014).

Given the challenges cited above, modernizing the teaching of the Arabic language has become a priority for the MOE in the UAE due to the language's status as the official and the mother tongue of the land. The MOE has been trying to introduce different best practice initiatives in the hopes of improving Arabic language teaching and learning in schools. One initiative has been the adoption of the Arabic Language arts standards (Taha, 2017b) by Abu Dhabi Education Council in 2010. In 2011, Dubai developed its own content standards for Arabic language as a core subject in schools. The standards-based approach called for the use of common standards that were rigorous, standardized between all schools, and aligned to a certain extent with the resources available in schools (Taha, 2017b).

Several other initiatives, which will be discussed later in this chapter, have been introduced in the UAE, and have started to impact the thinking surrounding Arabic language as an untouchable body of rules and syntax that cannot be modernized, and cannot be flexible, fun or evolving. The increasing awareness and knowledge in the field of teaching and learning Arabic language are leading many stakeholders to reflect on old and current practices that have not yielded any results to date. It is hoped that by raising awareness, it will lead to activism in modernizing the teaching and learning of the Arabic language and propel forward a field that has been stagnant for decades.

Quality of Arabic Language Programs Based on School Inspections

Private schools in the UAE are inspected on an annual basis. All Dubai private school reports and ratings are posted on the website of the regulatory authority for private schools in Dubai, the Knowledge and Human Development Authority (KHDA). Receiving an "outstanding" rating means that the school is doing exceptional work on a range of components including school culture, classroom environment, academic standards and curriculum delivery, safety procedures, provisions made for special needs students, and levels of achievement in every subject area (Knowledge and Human Development Authority [KHDA], 2018).

Inspection reports are meant to give an in-depth review of the performance and standards of private schools in Dubai (Knowledge and Human Development Authority [KHDA], 2018). School inspection reports include a "parent report" section which gives parents detailed information about the quality of education provided by their child's school, helping them make informed decisions. In addition, each report includes specific information about the quality of provisions available for students with special needs and the quality of early years education. The information contained in the reports is designed to assist parents in working more closely with schools, "as partners in their children's learning, and facilitates school improvement" (Knowledge and Human Development Authority [KHDA], 2018).

Most private schools offer Arabic for native learners and Arabic for non-native learners, to be able to cater to the linguistic needs of their linguistically diverse student body (Export.gov, 2016). Thus, school inspection reports have one rating for Arabic as a first language, and another rating for Arabic as an additional language. The rating scale used has five levels: outstanding, excellent, very good, acceptable, and weak (Knowledge and Human Development Authority [KHDA], 2018). Upon searching the KHDA's website for schools with an outstanding rating, it was found that 15 schools out of 149 schools inspected in 2016 were rated "outstanding". Studying the details of every report of those 15 schools, this researcher found that although those schools were rated as "outstanding" on every aspect of school academic and social life, they, however, consistently had a less than "outstanding" rating in Arabic language. Results for Arabic from those fifteen "outstanding" schools inspected in 2016 are summarized in Table 5.1.

Results summarized above are in line with parents' perceptions of Arabic language education in private schools, who think that Arabic teaching in private schools is not up to the level that they expect and want (Issa, 2013). Issa added that experts she spoke to said that private schools don't give Arabic language the attention it deserves. This is quite alarming and merits some in-depth research and analysis into the reasons why Arabic is not getting the attention it deserves, and why students are not attaining the proficiency levels expected in Arabic.

Table 5.1 Outstanding school inspection ratings and Arabic language programs

Outstanding schools (2016)	Arabic as a first language	Arabic as an additional language
1	N/A	Good
2	Acceptable	Acceptable
3	Weak	Good
4	Acceptable	Acceptable
5	Acceptable	Acceptable
6	Acceptable	Acceptable
7	Acceptable	Acceptable
8	Acceptable	Good
9	Acceptable	Acceptable
10	Acceptable	Acceptable
11	Acceptable	Good
12	Acceptable	Good
13	N/A	N/A
14	Good	Acceptable
15	Acceptable	Acceptable

Source https://www.khda.gov.ae/en/DSIB/Reports

Challenges for Arabic Language Education in the UAE

Looking at students' results and the consistent underperformance on Arabic language tests discussed earlier in regard to the PIRLS, the EMSA test, and school inspections, it is essential to discuss the reasons leading to these results as those could shed light on the solutions that need to be introduced in order to improve performance. Seven main challenges or impediments to quality Arabic language education in the UAE are set out below. Most of those challenges can be found in most Arabic language classrooms across the Arab world as well.

1. **Time and Resources Allocated to Arabic Language**

The first challenge, according to AlFarra (2011), is that Arabic language is not given the importance it deserves in most private schools. The lack of time spent learning Arabic in most private schools threatens the language. In addition, the quality and quantity of teaching and educational resources available are not similar to what students receive in English language, which could threaten children's identity (AlFarra, 2011; Bell, 2016). Arabic language is the only official language of the UAE, yet most private schools in the UAE treat Arabic as a "special subject", meaning it is not the language of instruction and the time allocated to it usually does not exceed 45 min per day. Not having enough immersion time in Arabic means that native learners of Arabic are not given the opportunity to delve deeply into the language and be immersed in it (AlFarra, 2011).

2. **Rigor**

The second challenge to the Arabic language in both private and public schools is that not enough rigor is given to teaching Arabic due to the lack of teacher expertise and suitable curricula (Bell, 2016). Teachers need in-depth training on what and how to teach non-native learners and how to carefully design learning and linguistic experiences that build on students' learning year after year. Parents often say that their children study Arabic in schools for years, yet they don't learn much and remain unable to fluently speak, read, or comprehend MSA.

3. **Uninformed Leadership**

A third challenge to learning Arabic is that private schools in the UAE are mostly led by expert Western leadership who do not speak Arabic and who do not have sufficient, if any, background knowledge about Arabic, its diglossic nature, and how best to approach teaching it. This leaves them at a loss regarding what to do and who to turn to for best practices in teaching Arabic. Parallel to that, leadership in public schools is quite focused on paperwork and the principal is rarely seen as an educational leader who needs to be informed and involved in all things academic at the school.

4. **Arabic Across the School**

A fourth challenge is that very few private schools, for example, encourage learning Arabic music, or the use of Arabic in newsletters, talent shows, theater, announcements, or artwork displayed. This limits the presence of Arabic language to the classroom only and often times sends the message to teachers, parents, and students that Arabic is not an important and fun language.

5. **Teacher Quality**

A fifth challenge in teaching Arabic in the UAE has to do with the quality of Arabic teachers hired in both private and public schools. Outstanding private schools in the UAE and across the Arab world strive to hire the best caliber of teachers from around the world. They have an annually scheduled "hiring season" where they scout great teachers in job fairs that are dedicated to matching the best candidates to schools (Teachaway, 2017). However, there are no job fairs available to Arabic language teachers, and thus private schools find themselves limited to a small pool of candidates who happen to reside in the UAE and who do not necessarily possess the quality of preparation and training needed to teach well. Thus, many private schools end up with a two-tier quality of teachers: well prepared and trained teachers for English medium subjects, and ill-prepared and untrained teachers for Arabic language, which in turn has unfortunate consequences on students' learning and on how Arabic is perceived. In public schools, Arabic language teachers are hired locally and regionally once they pass a test in Arabic language content and a short interview. However, student performance and Arabic language proficiency as depicted on national and international tests could be a (reflection) of the quality of preparation and training their teachers received (Saiegh-Haddad, 2005).

6. **Curriculum Quality**

A sixth challenge has to do with the quality of Arabic language curricula and resources used in both private and public schools. Most Arabic language curricula available in schools are textbook-based, grammar-based, and not well aligned with the twenty-first century skills nor with the other subjects in school (Faour, 2012). Moreover, there are very few quality Arabic digital resources available. There has been in the past few years a welcome surge in the production and quality of Arabic children's literature, but we have yet to see children's literature utilized as an effective and essential language learning tool in the classroom.

7. **Professional Development**

The seventh challenge has to do with Arabic language professional development in both private and public schools. Although private schools strive to train their teachers well, and provide them with annual and continuous professional development opportunities, however, when it comes to training their Arabic language staff they find themselves either training them in English language on issues that either do not relate to Arabic language education or are at a level quite above what the teachers need, or not training them at all (Taha, 2017a). Public schools do not have a sustained and targeted training plan for their teachers. Instead, all teachers are provided with 3 weeks of general training throughout the year that is held in a large facility where they choose to attend any 2-hour session they like, even if it is not in their field or grade level. No follow up on the training is usually done in public schools and teachers are not required to transfer any of that learning into their classrooms.

Arabic Language Teacher Preparation and Training in the UAE

The importance of quality Arabic teacher preparation and training cannot be emphasized enough. Teachers are the backbone of any successful and competitive educational system. Educational research has consistently emphasized the role of competent teachers in ensuring quality instruction and learning outcomes (Alamoush, 2009; Darling-Hammond 2006, 2010; Darling-Hammond, Holtzman, Gatlin, & Vasquez-Heilig, 2005; Faour, 2012; Taha-Thomure, 2009; Taha, 2017a). In this section, Arabic language teacher preparation (preservice) and training (in-service) will be discussed as two main issues impacting student achievement.

Quality teacher preparation programs are expected to graduate effective teachers who not only know their subject matter well, but who have a portfolio of pedagogies and methodologies they can use with ease to ensure that learning happens (Darling-Hammond, 2000, Darling-Hammond et al., 2005; Faour, 2012, Taha, 2017a). However, in his work entitled *Arab Education Report Card*, Faour (2012) recognizes that most teachers in the Arab world do not have the content knowledge and pedagogical skills required to succeed in a twenty-first century educational system. Most teachers

in the Arab world are not able to engage their students in higher order thinking skills (Faour, 2012; Taha, 2017a).

Arabic language teachers in the UAE share with many other teachers in the Arab world the same plight of being ill-trained. This is an alarming issue that can have national security repercussions. Arabic language teachers in public schools are entrusted with ensuring that students reach adequate fluency and accuracy in their native language (Arabic), can access information, can communicate effectively and appropriately in different situations, and can learn to think critically using this language (Gallagher, 2011; Taha, 2017a). Arabic language proficiency is so critical in all public schools in the Arab world because it is the language of instruction. Success in other subjects including math and science is dependent on students' ability to read fluently and with comprehension (Gallagher, 2011). Being able to read fluently, with comprehension, and critical thinking is a must in today's world. Those skills will dictate what higher education institution students get accepted at, and what kinds of jobs they can get in an increasingly competitive job market (Abu Dhabi Education Council [ADEC], 2014; Allen, 2003). Without a solid foundation in their mother tongue, it will almost be impossible for students to understand texts they are required to read, and they will most probably struggle throughout school with other subjects as well, if not dropping out of school altogether (Perfetti, 2007; Stanovich, 2000).

In its 2016 edition, the United Nations Development Program's *Arab Knowledge Report* (UNDP, 2016a, 2016b) stipulated that in order for the Arab world to move into the knowledge economy, and ultimately knowledge society, it will need to move from spending on wages, infrastructure, and logistical requirements to focusing more on the quality of the teaching and learning (UNDP, 2016a, 2016b). This of course is not attainable without having high-quality teacher preparation and training programs.

It has to be noted that most Arabic language teachers are the product, or most likely the victims, of low-quality education systems, and teacher education programs that fall short of adequately preparing them in content knowledge, pedagogical skills, and higher order thinking skills (Education in the Arab World, 2009; Faour, 2012; Taha, 2017a). Many teachers of Arabic are found to be lacking in content knowledge, and in adhering to the use of Modern Standard Arabic (MSA) as the language of instruction in their classrooms (Alamoush, 2009; Obeid, 2010; Taha, 2017a) which is what prompted the MOE in UAE to issue a directive in 2016 requiring all teachers to use MSA. Unfortunately, this directive remains largely ignored because teachers are not being trained to master MSA, and they have not to date been appraised or held accountable based on their use of MSA in the classroom.

The UAE has five federally funded higher education institutions and more than a 100 private higher education institutions (Nassir, 2017). Very few universities in the UAE offer Arabic language teacher preparation programs. No federal institution of higher education offers any Arabic language teacher education program (Emirates College for Advanced Education, 2018; Higher Colleges of Technology, 2018; United Arab Emirates University, 2018; Zayed University, 2018). They all offer a primary years education program that is focused on general pedagogy which might include a couple of courses in Arabic or linguistics, but none offers a stand-alone Arabic

language teacher preparation program (Emirates College for Advanced Education, 2018).

There are a few scattered private institutions that offer Arabic language teacher preparation programs, but these programs have not proven to be of the quality, rigor, and modernity that the country and the field need. This has had great ramifications on the schools and on the quality of Arabic language instruction. It has also manifested itself in students' results and achievement. The quality of teaching has been shown to be related to the quality of preparation and preservice training that teachers receive (Bannayan & Al Attia, 2015; Darling-Hammond, 2006; Taha, 2017a). The links between student achievement and teacher preparation are quite strong and telling, and therefore, merit a closer look at some of the results on international literacy tests.

The lack of accredited, highly responsive, modern, and rigorous programs for preparing Arabic language teachers in UAE higher education institutions is an issue that will need to be addressed with urgency given the increased attention Arabic language has been receiving in the past decade (Burden-Leahy, 2009). One promising development in 2018 has been the announcement of a teaching licensure process. This will be discussed later in this chapter, and it will be very interesting to see the impact this will have on Arabic language education.

Continuous Professional Development for In-Service Teachers

Continuous professional development or what is called "professional learning" (Fullan, 2007, cited in Taha, 2017a) is essential in ensuring that in-service teachers deepen their knowledge, reflect on their practices, and receive support from peers within their network. According to Fullan (2007), student learning depends on ensuring that every teacher is learning all the time (Darling-Hammond, 2012). Very few teachers of Arabic receive meaningful and sustained in-service professional development (Taha, 2017a). Those who do are usually offered "drive-through" professional development comprised of a few hours spent looking at a new concept or strategy that does not necessarily lead to any classroom transfer of learning (Coe, Aloisi, Higgins, & Major, 2014; Taha, 2017a). The MOE in the UAE is slowly recognizing the importance of meaningful and sustained professional development that is centered within each school, and that works to build its own professional learning community and link it to other communities that are doing similar things.

Currently, the MOE has allocated three professional development weeks throughout the year where teachers get 120 h of compulsory training.

The training hours are currently distributed as follows: a week (five full work days) before schools start, a week at the end of the first semester and 1 week at the end of the second semester. When attending these training sessions, teachers go to a large, well-equipped training facility in the emirate of Ajman where they can choose from a long list of sessions on various topics, ideas, methodologies, and

domains. The schools do not come to those training weeks prepared with a plan to focus, for example, on one specific topic that all teachers of Arabic must engage in, and implement in their classrooms, nor are the schools involved in how the teachers apply, experiment with, and follow up on what they have learned.

UAE Arabic Language Plans and Initiatives in the Past Decade

The concern over the status of the Arabic language and Arabic language education in schools resonates throughout the Arab world. Many initiatives have been proposed, and many projects have been funded over the years to help find solutions for the less than acceptable standards in the use of Arabic language (Gallagher, 2011). In the past decade, the UAE has been at the forefront of Arab nations that are actively working to create and support Arabic language initiatives with the objective of preserving the language, and modernizing its pedagogical tenets all at once.

Shaikh Mohammad Bin Rashed Al Maktoum, the vice president of the UAE and ruler of Dubai, has taken it upon himself to ensure that, at the level of policy, support is in place to support the language. He, moreover, ensured that the federal government, in general, and the government of Dubai in particular allocated the funds and human resources needed so that all policies and initiatives concerning the Arabic language are well supported, and followed through. Many of those initiatives have proven to be quite popular, and effective not only in the UAE, but throughout the Arab world (Akhanian, 2016; Bell, 2016). It is yet to be seen what the actual academic impact of these initiatives is. This will need some longitudinal research projects following and tracking the impact of those initiatives on teaching and learning of Arabic language, and on youth's perception about the language. Below is a brief description of the main Arabic language initiatives that have been in place in the UAE starting in 2012.

Arabic Language Charter

The UAE's *Arabic Language Charter* was introduced in 2012. It is a frame of reference for all policies, and laws governing the long-term vision for modernizing, and preserving Arabic language. The charter includes 13 items that range from emphasizing Arabic language as the official language of UAE, and as such the language of all official written communication, laws, and decrees. Moreover, the charter indicates that Arabic language will be the language of all government services (Emirates News, 2012).

The charter encourages all private schools and language centers to offer Arabic language classes for non-native learners (Emirates News, 2012). According to the charter, higher education institutions and research centers in UAE will be responsible

for enriching the language with new Arabic language jargon, terminology and lexicon, and conducting academic research that will inform the field of Arabic language teaching and learning including translating international literary, and scientific works into Arabic (Emirates News, 2012).

Arabic for Life Report

Commissioned in 2012 by the vice president of the UAE and ruler of Dubai, Sheikh Mohammad Bin Rashed Al Maktoum, a high-powered committee produced an evidence-based report in 2013 that proposed ways to modernize the teaching and learning of Arabic language along five domains including curriculum development, culture of reading, teacher preparation and training, role of media, and Arabic for non-native learners (Arabic for Life, 2014). The report highlighted results from a large-scale survey of teachers, and students in several Arab countries, whereby, over 70% of teachers, and students believed that Arabic language teaching is all about grammar and 67% of students said that they have difficulty with grammar (Arabic for Life, 2014).

BilArabi Initiative

Launched by Shaikh Mohammad Bin Rashed Al Maktoum in 2013 as part of the Mohammad Bin Rashed Foundation (MBRF), the *BilArabi* (meaning: in Arabic) initiative to inspire Arabs, young and old, to show their support in preserving the language by using MSA as their primary form of communication over social media (Ramahi, 2017). Many Arab youths prefer using English language on social media, or a mix of Arabic and English, or writing Arabic using Latin letters known as "*Arabizi*" or using their own local Arabic dialects to express themselves on social media outlets (Ramahi, 2017). Although the *BilArabi* initiative has gained a number of followers over the years (Akhanian, 2016; Ramahi, 2017), however, it is not known whether following the initiative means that followers will be using Modern Standard Arabic in their social media communication.

Arabic Award

The *Arabic award* was established by Shaikh Mohammad Bin Rashed Al Maktoum in 2015. It is considered "the highest appreciation of the efforts of the Arabic language individuals, and organizations, and is part of the initiatives launched by His Highness Sheikh Mohammad Bin Rashed, to promote, disseminate, and facilitate learning and teaching of Arabic language, in addition to enhancing the status of Arabic lan-

guage, and encouraging those who aim to nourish it" (Arabic Award, 2018). The *Arabic award* offers recognition in 11 categories including teaching, and learning, technology, culture, media, language policy, and translation (Arabic Award, 2018).

Arabic Reading Challenge

In 2015, the ruler of Dubai, Shaikh Mohammad Bin Rashed Al Maktoum, announced the *Arabic Reading Challenge* considered to be the largest Arabic language reading initiative ever started in the Arab world (Arabic Reading Challenge, 2018). The challenge aimed, according to its website, to instill in the new generation a love for reading, making reading a habit in their lives, recognizing the role of culture in spreading the values of coexistence, acceptance, and openness to other cultures, prepping a generation of talented people, developing Arabic language curricula across the Arab world, and enriching the cycle of writing, publishing, and translation (Arabic Reading Challenge, 2018). The Arabic Reading Challenge had 3,500,000 participants from 15 Arab countries and 11 foreign countries in its first round in 2016 who collectively read 50,000,000 books (Arabic Reading Challenge, 2018).

Reading Law

In 2016, Shaikh Khalifa Bin Zayed Al Nahayan, President of the UAE, issued the first *Reading Law* of its kind in the region. The law aims to institutionalize reading as a cornerstone in achieving the Emirati vision. The reading law makes reading a right that is available to all (Salama, 2016). According to this reading law, every Emirati newborn will receive three book bags that will target the child's reading needs from birth to four years of age (Salama, 2016). The reading law asks all school and university libraries, in addition to public libraries, to enrich and increase their collections of books on an annual basis. All reading "goods", and materials according to this law are tax exempt. The law dedicates 1 month a year as the reading month across the UAE (Salama, 2016).

Living Arabic

Living Arabic is an initiative started in 2016 by the Knowledge and Human Development Authority (KHDA) in Dubai. It is a platform where educators come together to share, and develop innovative solutions for Arabic language teaching and learning, pushing toward one common goal of providing a first-rate education for all UAE students, as outlined in the UAE National Agenda's Vision 2021 (Knowledge and Human Development Authority [KHDA], 2018).

Faseeha Directive

In 2017, the Knowledge and Human Development Authority (KHDA), in addition to the MOE and the Abu Dhabi Education Council, issued a directive to all public and private schools requiring all teachers of Arabic to use modern standard Arabic (MSA) during conversations and curriculum delivery (The National, 2017a). The directive added that school inspectors will assess language usage during lessons and will consider the use of MSA a priority (The National, 2017a).

Arabic Literacy Strategy and Pilot Study

The national Arabic language strategy came about in 2017 after a thorough study conducted by the author of the present chapter on behalf of ADEK and the MOE. The strategy revolves around strengthening the teaching of reading in grades 1–3 by training teachers on the use of the phonetic approach alongside a literature-rich approach. Classrooms according to the strategy need to be equipped with reading corners, and a semi reading workshop approach needs to be integrated into the curriculum using the four types of reading (reading aloud, shared, guided, and independent), and word study. Five pilot schools have already started implementing the strategy and teachers in those schools are being coached on a regular basis. If the pilot proves to be successful, the strategy might be expanded to all public schools across the UAE.

Conclusion: Future Needs and Plans

Arabic language education in UAE has received some unprecedented attention in the past decade. Numerous initiatives and laws have been introduced, some more successfully than others. It is worth mentioning the massive success of the *Reading Challeng*e initiative that has within the span of 3 years seen millions of children across the world reading in Arabic. Moreover, school inspections introduced in 2009 have served as evidence-based and eye-opening experience regarding Arabic language educational quality. There are, however, several challenges that will need the community of Arabic language educators, researchers, and policy makers in the UAE to come together in search of solutions. This will include Arabic teacher preparation and training, research-based policies, leadership training, and research. In terms of Arabic language teacher preparation and training, schools, private and public, will need to start a nation-wide initiative of training those teachers who are willing to be trained and retiring or ending the services of those who are unwilling to be part of the development journey. Well-supported professional learning communities are an urgent need in schools as they can form the impetus for school-based reforms, change, and for ensuring that students are learning (Dufour, 2004).

This means that adjustments to the Ministry of Education's budget will need to be made to slow down the leap into automation, technology, and surplus hiring so that more investment, time, and resources are allocated into teacher preparation programs and teacher development programs (Fullan, 2007). Of course, spending on technology and facilities is more visible and probably more fun in the short term giving people something to show off, while training teachers and principals is typically hard work that takes a long time to see the results of and is not as glamorous and visible as purchasing and setting up a science, technology, engineering, and math (STEM) lab. Some reflection into the allocation of resources and budgeting priorities will need to be done urgently (The National, 2017b). The UAE has consistently highlighted the importance of investing in the human factor, and hopefully, such a proposal of investing in training and upskilling of teachers and educational leaders will resonate.

Teachers in the UAE will soon need to pass a test in content knowledge and a test in pedagogical knowledge in order for them to be licensed to teach. It will be important to see what the results of the teaching license will be and how it will affect student achievement in the long term. It is hoped that the introduction of the teaching license will have a backwash effect on teacher preparation programs in the country. It is unclear yet whether programs that will be found lacking in the quality of their graduates will be held accountable in any way. Moreover, MOE will need to foster partnerships based on trust and a common vision with prominent universities in the UAE for the proper preparation and training of Arabic language teachers. It is this dialogue between regulators and service providers that will enable them to move the field of Arabic language education forward.

This leads into the topic of policy, where there still is a great need for a clear, research-based, well-implemented, and supported Arabic language education policy that all schools public and private adhere to, and are held accountable for (Plecki, Elfers, & Nakamura, 2012). Research on Arabic language classroom practices across the UAE is a requirement so that the field can be better informed about what's being done right, and what needs improvement.

Furthermore, leadership training is another point that is in need of immediate attention. Leaders in private schools need to be trained on the key elements of best practice Arabic language education, and what best practices they should be looking for and championing in their schools (Ghanimeh, 1996; Obeid, 2010). Private school administrators need to engage with the community and champion Arabic language through quality teaching and learning and through integrating Arabic into music classes, art, physical education, and all activities that students engage in. Principals in public school need intensive training on how to be hands-on educational leaders rather than administrative managers and gatekeepers. They need to be trained on how to mentor teachers, and how to remain engaged, and up to date on educational research and best practice.

Future research will be needed in the area of Arabic language education in the UAE. Arabic classroom practices, the effect of the new UAE licensure and other policy provisions on Arabic teacher education and student perceptions of Arabic are just a few topics that need to be looked at in future studies. With its vision, leadership,

and resources, the UAE is positioned to possibly be the leader of Arabic language educational change in the Arab world by sharing best practices, success stories, and lessons learned. The current vision is promising and inspirational, but staying the course and focusing on the right drivers will be needed in order to ensure effective and favorable long-term results.

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Chapter 6
The 'S' and 'T' in STEM: Integrating Science and Technology in Education in the UAE

Martina Dickson, Patricia Fidalgo and Dean Cairns

Abstract In this chapter, we look at the ways in which STEM (science, technology, engineering and mathematics) has influenced education in the United Arab Emirates (UAE) over the last few decades, focusing in particular on the use and integration of educational technology in schools and higher education institutions (HEIs). Key to the uptake of technology in education is the attitudes, perceptions and self-efficacies of teachers, faculty and administration. We summarize key literature emanating from both school and HEI sectors in the UAE and then discuss technology links to science education in the UAE, and the emirate of Abu Dhabi in particular. Finally, we present four key examples of how science and educational technology can effectively be integrated, and make specific suggestions of ways in which this could be linked to the UAE context. We conclude with some key recommendations for the effective integration of science education and technology.

Introduction

The economy of the UAE has been based predominantly upon oil revenues since oil was discovered in the 1950s. With the growing realization of the short-term nature of dependency upon fossil fuels, the UAE government has placed much emphasis and brainpower into ways in which economic sources in the country could be diversified. Education plays a central role in the UAE Vision 2021. Here, the need for a knowledge economy over oil is highlighted in its aims to 'transition the UAE into a knowledge-based economy which promotes the role of UAE nationals in innovation, research and development, and to be among the best in the world in this' (UAE Vision 2021, 2010).

These three elements of innovation, research and development are directly connected to a need for quality STEM education at all stages starting with primary schools, up to and including HEIs. The emirate of Abu Dhabi in particular has dramatically reformed its schooling systems during the last decade. Two of the most

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salient changes which the past decade has brought to schools include the recruitment of large numbers of native English speaking teachers at both primary and secondary levels, and an alteration of the medium of instruction for both science and information technology subjects from Arabic into English.[1] The increase in large numbers of expatriate teachers was necessary due to the fact that there are small numbers of Emirati teachers of English medium subjects. This is partly due to the relatively small population of Emiratis, and due to the availability of jobs in other employment sectors which are considered to be more lucrative both financially and in terms of societal status (Swan, 2011). There has also been a wide variety of models of in-service teacher training to try to upskill existing teachers to align with the ambitious demands of the new curricula introduced, often with significantly different pedagogical approaches to previously. The characterization of students as autonomous learners was a sharp deviation from the more teacher-centred learning situations in schools of the previous decades (Macpherson, Kachelhoffer, & El Nemr, 2007). In science and information technology (IT) among other subjects, this has included, for example, the need for students to be able to problem solve, work independently using investigatory approaches to learning, and to have the necessary IT skills to be able to integrate these with all of their learned subjects, including Science. When the New School Model (the term used for the new curriculum implemented in schools in Abu Dhabi at that time) was rolled out in 2010, there was a strong emphasis on STEM and twenty-first century skills (Pennington, 2016).

Within the Gulf Cooperation Council (GCC), it is understood that countries now recognize the need to prepare their citizens for tomorrow's employment challenges and that educational technology can be a catalyst to help them move forward (Dini, Markey, & Mohamad, 2015). Wiseman, Abdelfattah, and Almassaad (2016) carried out research in GCC countries to examine the connection between STEM education, citizenship status and expected participation of citizens in the labour market. The authors looked specifically at the dominant effects of ICT-based instruction and concluded that ICT-based STEM instruction helps youths to develop a diverse range of skills including the ability to continually re-educate themselves as well as think critically, which has a major impact in the labour market. According to the 2011 Trends in International Mathematics and Science Study (TIMSS), the development of human capital in GCC nationals and expatriate youth is differently influenced by ICT-enhanced STEM education (TIMSS & PIRLS International Study Center, 2011). It was found that while expatriate youths valued STEM education as an avenue for future employment, GCC nationals did not. The study authors suggested that this may have been due to tendencies to rely more on non-education-related factors (such as social connections), leading students to think they can get the job they want without having to do well in science. So, while it is clear that much progress has been made in a short time in the UAE, a developing nation with a developing educational system, it is also clear that much is still to be done in upskilling human capital, and in perceptions of the usefulness and relevance of STEM.

[1] Personal Communication with Abu Dhabi Educational Council personnel.

We focus our discussion in this chapter in particular around the emirate of Abu Dhabi, for the following reasons: first, for the pragmatic reason that as a team of authors, we have long-term work experience within education in the emirate, and second, because Abu Dhabi is the largest emirate in the UAE and has been in many ways at the forefront of major educational reform since circa 2007. Other emirates at points in the educational history of the country have also taken the capital's lead on educational reform. The ongoing work of the Dubai government to integrate technology into education has been hugely significant, in particular the innovative Mohammed Bin Rashid SMART learning program which started in 2012. This involved, for example, universal Internet connection, the use of free school-issued tablets for each child, digital textbooks and other innovations (Pennington, 2014). This followed on from another ambitious project over a decade earlier, the Sheikh Mohammed Bin Rashid Education Project which launched in 2000, and included the installation of computing labs in the schools which participated in the project to apparent great effect (Embassy of the UAE Cultural Division in Washington D.C. Report, n.d.).

Perceptions of Technology Use in UAE Institutions

The first step in emphasizing or introducing STEM into institutions is to understand the skills, competencies, perceptions and attitudes of all involved (Corlu, Capraro, & Capraro, 2014). The diversity of educational institutions in the UAE means a diversity of resources, training, qualifications and backgrounds of teachers and administrators, which may contribute to ambiguity towards the implementation of technology. There are also specific challenges to the implementation of technology such as a lack of confidence among teachers, lack of consistency and high turnover of expatriate staff (Nasir, 2018) which may impact successful implementation of STEM in both schools and HEIs. Since the nature of these sectors is different due to factors such as the maturity levels of students, system requirements and likelihood of use of tools such as learning management platforms which are unlikely to be used in schools within the public sector, we next examine the available literature on the two sectors separately. We close this section of the chapter with a segment on students' perceptions on the use of technology.

Perceptions of Technology Use in Schools

Research studies in the UAE tend to investigate technology integration in K–12 schools by collecting quantitative data about teachers' attitudes and perceptions. This fact in itself is noteworthy and indicative of the 'early stages' nature of STEM in the UAE, and will be touched upon later in the chapter. Almekhlafi and Almeqdadi (2010) showed that teachers were promoting students' learning by integrating technology in their classes' activities, by, for example, use of content-specific hardware and

software. The authors found that teachers' self-perception of their ability to integrate technology successfully in the classroom was high. Several barriers to technology integration were identified: number of students per class, teacher motivation, negative teacher and parent attitudes about technology impact on the educational process, technical problems and financial support. Despite these barriers, and to different degrees of effectiveness, teachers were integrating technology in their classes. This study did take place in a UAE 'model school' as they were known then, which tend to have a better infrastructure and provide more frequent professional development activities for teachers, so the results may not have been indicative of teacher attitudes across the wider public school sector, even though the authors implied that other public schools had the same advantages in terms of technology resources and teacher training.

Some interesting studies have been carried out into prevailing attitudes amongst school leadership into the use of educational technology in their schools. For example, Serhan (2007) showed that principals in 200 UAE schools (sector not specified in the study article) exhibited overall positive attitudes towards the use of technology in their schools. The study showed that, critically, those school principals were also willing to improve their own knowledge and skills as well as those of their staff, and were enthusiastic about the link between the use of technology and the motivation, interaction and participation of students. This suggested that the will to integrate technology into school environments certainly exists. This is important since the support of leadership is critical to fostering an innovative and STEM-friendly ethos in a school. Other UAE studies have focused on tracking and evaluating e-learning with some positive effects, such as the implementation and use of tablets in a pilot project in the private school sector (Ally, 2013), where some benefits were seen and predicted by teachers and administration alike.

Al-Awidi and Ismail (2014) investigated ESL teachers' perceptions regarding the use of Computer Assisted Language Learning (CALL) in teaching reading to children in the UAE. Teachers reported using computers to enhance children's reading skills, support children's reading, listen to stories being read aloud, recognize letter/sound relationships, and identify letters and beginning sounds of words. Teachers also reported that the technology provided opportunities for active interaction and differentiated instruction. Three main barriers to its successful implementation were cited to be the lack of availability of resources, lack of hardware and lack of suitable programs.

Perceptions of Technology Use in HEIs

In addition to the use of technology for teaching and learning purposes, in HEIs sometimes the impetus is also fuelled by other institutional needs such as scheduling, registration, assessment data management, which inspire interest in a tool which can perform all of these functions in addition to meeting educational needs. An example of this is an all-encompassing learning management system (LMS) which

can perform multi-functions, including those mentioned. This is highly dependent upon the institutional infrastructure and technological support which is available, which in turn is highly dependent upon budget allocation for these factors. Teachers also have to feel confident and competent in implementing technology and using devices in their classrooms, particularly in the age of 'digital natives' where often, younger students are more comfortable and fluent with technology than their teachers (Salajan, Schönwetter, & Cleghorn, 2010).

In the UAE, a variety of studies have taken place in the way in which technological devices are perceived and received by instructors in HE. Hargis, Cavanaugh, Kamali, and Soto (2014) studied faculty perceptions of the use of iPads and how these were integrated into student learning, following the mandatory introduction of tablets into foundation programs in the federal tertiary institutions. It was found that the iPad deployment was associated with the adoption of a more student-centred pedagogy and greater engagement with both informal and formal professional development. An additional spin-off of the program was that informal professional learning communities began to flourish, which was particularly important given that the study also illuminated that there were faculty with weaknesses in their own knowledge and skills of technology.

On many occasions, it is up to educators to decide if they want to adopt and integrate new technologies. Studies have indicated that 'educators who do decide to adopt new instructional technologies are frequently not supported [by institutional leadership] with follow-up activities or in-depth staff development, resulting in minor integration of the new technologies into their existing instructional methods' (Kagima & Hausafus, 2001, p. 35). According to Kagima and Hausafus (2001), this lack of institutional support including professional development in the use of technology remains a significant obstacle to the integration of new technologies in education. In a study designed to investigate how ready UAE educational institutions were for the twenty-first century, three key measurement indices were utilized (Al Blooshi & Ezziane, 2013). One, the identification of twenty-first century tools used in the three educational institutions included in the study, two, an examination of the abilities of students to learn both on and off campus, and three, the type of assessment tools used in the institutions. It was found that each educational institution had a different approach to the twenty-first century vision and was prepared at different levels. There was a relative change in the average scores for the three measures, over time, indicating that progress had been made, but that they stand now at a 'crossroad'.

In their UAE study of HEIs specializing in teacher training, Al-Awidi and Alghazo (2012) presented results which suggested that an optimal way to train pre-service teachers, which would result in them using the techniques themselves as teachers, is to have opportunities to observe teachers modelling the use of technology. In this way, they would learn vicariously from their teachers or supervisors. Their study also suggested some issues within the program structure of pre-service teacher training programs which might result in teachers not being fully prepared to engage in educational technology in the classroom. Other studies have indicated a large readiness of pre-service teachers to use software and integrate this as part of the curriculum, showing an ability to select appropriate technology resources and a

strong willingness to use this (Serhan, 2009). Faculty can indirectly pass on efficacy, knowledge and skills in educational technology by demonstrating the use of a variety of technological techniques themselves and thereby modelling their use (e.g. Smith, 2016). In this way, students become familiar with techniques and witness their use in an environment with which they are comfortable and familiar, and which they might be more easily able to then apply to their own teaching practices.

Finally, Parkman, Litz, and Gromik (2017) studied the extent to which pre-service teachers in the UAE planned to use technology-rich learning environments in their future teaching careers and showed that while there was a strong acceptance of technology-rich environments, the key predictors of intentions of future behaviour were perceived usefulness and computer self-efficacy. Studies of pre-service teachers' beliefs, confidence levels and self-efficacy suggest that there may be some issues of low indices of these in the UAE (e.g. Dickson, McMinn, & Kadbey, 2017; McMinn, Dickson, & Kadbey, 2015) and that sometimes, this appears to be caused by a lack of in-depth understanding of subject matter content knowledge (Tairab, 2013). We know, from our own anecdotal experience as teacher training faculty, that students often use in practicum what they have seen modelled by faculty in their college classroom. We have seen examples of this in particular applications and websites for classroom management, formative assessment, for example, but also in the ways in which the students observe their teachers using their interactive smartboards. All public schools in Abu Dhabi now utilize interactive smartboards, yet not all HEIs do. One research study which took place in a large public UAE University evaluated the effectiveness of the interactive whiteboard technology (IWBT) in teaching (Al-Qirim, 2011). This study attempted to unveil factors influencing IWBT introduction and its use in different departments. The research highlighted different theoretical and professional contributions and raised the need for more research in the IWBT field. Where the use of such technology is ambiguous to faculty, it is easy to see that student teachers are not seeing modelled what they should be putting into practice during practicum.

Students' Perceptions of Technology Use

There is no doubt that students in the UAE are indeed 'digital natives' and that in many cases, they may be more ready to embrace technology than their teachers. One study within a UAE institution showed that students were highly familiar with mobile devices and their uses: 99% of the students had either a smartphone or a tablet, and 81.5% of the students indicated that they were using their mobile devices in their study (Al-Emran, Elsherif, & Shaalan, 2016). Given these statistics, it is critically important that faculty upskill (where appropriate) either by the type of intervention which Hargis et al. (2014) described whereupon iPad deployment led to more student-centred pedagogy, or engage in professional development and work with colleagues to learn how to integrate technology use into their lessons.

At the University of Sharjah in the UAE, Abulibdeh and Hassan (2011) investigated the relationship between students' self-efficacy in IT and their academic achievement, through the influence of e-learning interactions. Their results indicated that the relationship was not necessarily a direct correlation, since their results did not show that simply stating a high IT self-efficacy alone would lead to academic achievement, but that academic achievement required a host of other factors to interplay with this, such as interactions with other students, e.g. collaborative learning, and interactions with instructors.

Santos (2013) studied the use of mobile devices through the implementation of a mobile quiz activity to enhance student learning and explored the implications of bringing those personal devices to the institution, as well as the impact of using mobile devices on student learning. These mobile devices were used to encourage class discussion and promote formative assessment. This study provided strong evidence to justify the costs of increasing institutional bandwidth to enable Internet access on students' personal mobile devices. Most students liked the idea of using their mobile devices in class and many recommended the idea to be used by other instructors too. Students found the process of accessing the quizzes easy, demonstrating their status as 'digital natives' and the study indicated that students may only need IT support regarding the distribution of applications.

Integration of Technology with Science Education

We now turn our attention to the 'S' in STEM, the ways in which science and technology can and should be, clear partners in the STEM movement. The science curriculum currently in use in Abu Dhabi government schools has strongly emphasized science and inquiry skills, as the following excerpt from the Grade 5 science curriculum[2] for science skills demonstrates in the 'Investigating Scientifically' strand of the curriculum:

- Construct a scientific question to investigate and predict the outcome.
- Outline how to investigate a scientific question.
- Identify the variable(s) to change, measure and keep the same.
- Select equipment for carrying out an investigation.
- State the obvious hazards in an investigation.
- Carry out a fair test.
- Make at least three suitable observations/measurements.
- Record and organize data from observations or measurements.
- Draw a simple bar chart.
- Describe observations and simple patterns in data.
- Draw conclusions from patterns in data.
- Suggest two improvements to an experiment.

[2]Earmarked for change in September 2018.

Each of these skills is intended to be achieved by each student by the end of the year, but the intention is that teachers integrate the skills throughout the science curriculum content of the particular grade level. The content of the Abu Dhabi curriculum at the time of writing is divided into four segments, denoted 'Matter' (linked to chemistry elements), 'Earth and Space' (linked to geological elements), 'Living World' (linked to biology elements) and 'Physical World' (linked to physics elements).

Inquiry-Based Learning

The science skills are closely tied to inquiry-based learning and give opportunities for the fostering of critical thinking and for students to deeply engage. Students are likely to gain depth of understanding when involved in their own learning, such as through inquiry-based pedagogies (Healey & Roberts, 2004). Inquiry-based learning has the ability to 'improve science teaching by engaging students in authentic investigations, thereby achieving a more realistic conception of scientific endeavor as well as providing a more learner-centred and motivating environment' (Kubieck, 2005, p. 1). Within the curricula used in the UAE (using the Abu Dhabi model as an example), there is ample scope for inquiry-based learning using the designated science skills.

We now outline four key examples of ways in which technology can be integrated with science teaching and learning, and how this has been used to effect in other contexts, or is being used in the UAE, where applicable.

Use of Photography and Video Acquisition Devices in Science

Research has shown the effectiveness of the use of mobile technology including iPads in lessons involving investigative and inquiry-based approaches. As an example, students can work in small groups to design simple moving vehicles from available materials, collecting time and distance data during experiments, and the groups can use an iPad to take photos and videos using the camera app of their construction process of the prototypes, as well as at least one video of an experimental trial. They can also instal apps which connect to force and motion (Wilson, Goodman, Bradbury, & Gross, 2013). There are pedagogical advantages to students using iPads to take photos or videos of themselves performing experiments. These include creating a dialogue alongside observing an experiment, recording predictions before the experiments and drawing conclusions afterwards. These kinds of activities also create opportunities for students to work together in teams, both collaboratively and cooperatively, with each member contributing and working together towards a common goal. There are numerous ways in which the current science curriculum can be implemented to integrate technology, not only in Abu Dhabi, but across the emirates,

e.g. force and motion, Newton's Laws, etc., concepts which form an integral part of the physics curriculum.

One UAE study by Awani, Senteni, Singh, Bin, and Smart (2016) aimed to explore teachers' and students' perspectives on the impact of digital videos in teaching. The authors also wanted to investigate teachers' practices, strategies, difficulties and beliefs about the use of video in their classes. The study focused on the impact videos have on students' learning, motivation and satisfaction. A strong relationship was found between students' learning and engagement, and the use of videos. This research stressed the need for the curriculum to be supported by a web-based video sharing platform that could showcase the best teaching practices. It also shed light on the need for effective integration of video technology with curricula as well as pedagogical knowledge and skills on how to create videos suitable for the current educational systems.

Still on the theme of using technology as visual aids, Tamim (2013) used a mixed methods approach to conduct a study on school teachers' use of YouTube videos in the UAE, and concluded that integrating YouTube videos into lessons had perceived advantages including supporting the learning process, increasing interest and efficiency, and enriching content, but that the majority of participants were using videos for presentation purposes in teacher-led classrooms. There seemed to be a lack of knowledge about the potential of visual pedagogies and how they could support students' understanding and involvement. However, allowing students the flexibility to search for and upload movies of their own experiments for teaching and learning purposes proved very useful.

Use of Data Sensors and Data-Gathering Probes

Increasingly, schools are attempting to incorporate technology into the acquisition of science skills involving collecting data, using data probes and associated hardware. Examples of these might include using a range of sensors to measure temperature, wind speed, humidity, in investigations connected with weather, sensors which measure time, speed, force, in mechanical experiments, pH and CO_2 levels in chemistry and biology experiments. Even though these topics are normally associated with middle and high school science work, there are also ample opportunities in primary science for the use of data probes. Handheld-based data collection probes can be used to extend inquiry-based investigations with real-time data and visualizations. Sensors can capture data, create visualization (e.g. on small screens connected to the probe, laptops or on iPads if the correct app is installed) (Maldonado & Pea, 2010). Students have also been shown repeatedly to favour mobile devices in learning both their class subjects and outside of the class (Looi et al., 2011). Tablets and other handheld devices are also very helpful in field-based science. There are numerous examples of possible field-based activities where students could gather data using probes, for example, checking water quality, plant samples, in ecosystems in the UAE such as the mangroves, or measuring temperatures of various turtle breeding grounds which exist along the UAE and Oman coastlines. In these ways, the use of

data-gathering devices can be closely integrated into science curricula. Looi et al. (2011) give examples of how students can embark on 'authentic missions that can be completed through constructive and productive learning activities' (p. 271). Guided by a socio-scientific question, students can work both individually and collaboratively to carry out their 'mission'.

For faculty who are not confident or skilled in the use of technology, the idea of integrating a full science lesson using probes, data loggers and iPads may be too overwhelming. We have previously mentioned the value of having faculty model by use, a variety of techniques which students could then use, but this is not always possible. Planning for students to have more flexibility to use the technology they are familiar with shows that faculty are willing and interested, if not skilled. For example, giving students opportunities to self-direct their learning, or to gather and access course information and present information using any technology they wish to, might overcome some of these issues.

Geographical Information Systems

The UAE is a country with diverse (given its relatively small size) topographical, geological and weather conditions, which lends itself very well to connecting science of Geographical Information Systems to track and model this terrain. From 2011 until 2014, Abu Dhabi Education Council (ADEC) science curriculum development was focused on integrating inquiry-based learning as a core methodology in all phases (cycles) alongside context-based science education and a cooperative learning approach. This strategy was an implementation of the guidelines produced by prior work in this field (Lowe, 2004) in which students in New Zealand experienced cooperative, inquiry-based group work and assessment methodologies resulting in a significant improvement to science-related attitudes. Further to this, the aim was to develop the role of technology in science education to enable students to explore authentic scientific phenomena interactively and perform complex, inquiry-based learning activities (Hanif & Al-Ahmadi, 2009). The inquiry-based learning activities developed for the cycle 2 (middle years) curriculum are of particular interest as they were implemented in a number of schools and iteratively developed through a piloting process. These innovative inquiry units included the use of geographical information systems (GIS) software and various other technologies.

One such example of an inquiry-based learning unit was titled, 'Endangered Species: The Asian Houbara' (Abu Dhabi Education Council, 2011a). The Asian houbara is a migratory bird that is used as a quarry for falconry, which is an important aspect of UAE culture and heritage. Upon noticing the decline in the number of the Asian houbara, Sheikh Zayed bin Sultan Al Nahyan established a breeding program in 1982 at Al Ain zoo (International Fund for Houbara Conservation, 2017). The International Fund for Houbara Conservation (IFHC) was established to continue and extend this project in 2006. This inquiry unit linked the conservation work carried out by the IFHC with a number of outcomes in the science curriculum. Learning experiences in the unit were diverse and engaging, and included visits to

the National Avian Research Centre (NARC) where students studied with scientists working in captive breeding and release programs. The unit also integrated the *Partnership for 21st Century Learning's Skills Framework* (Partnership for 21st Century Learning, 2016) which was developed by professionals from the business world and educational experts to outline the skills and knowledge required for students to successfully contribute to society, both at work and in the wider community. One key element of this framework is the development of information, media and technology skills. Students developed their technology skills in authentic, inquiry contexts by carrying out GIS related tasks, such as mapping GPS data using GIS software, in order to establish the conditions experienced by the houbara on their migratory routes.

A second curriculum-linked inquiry-based learning unit involved the study of the mangrove forests around the main Abu Dhabi islands (Abu Dhabi Education Council, 2011b). Development projects, such as the construction of a new island, had led to concern regarding the conservation of mangrove areas as important ecological resources. In this unit, students were expected to plan a media campaign to promote the conservation of the vulnerable mangrove forests. The inquiry unit began with students accessing GIS software and using pre-uploaded geographical data to assess the changes that had taken place in the Abu Dhabi area since the 1970s. Students also learned, through online research, that mangrove forest conservation actions, such as plantation and seed dispersal channel construction projects, were already underway. Immersive activities then took place, such as touring the mangrove swamps in kayaks and using portable devices with integrated cameras, GPS systems and mobile Internet capabilities, to collect environmental data and audit the wildlife in the area. The resulting data was uploaded by the students, in situ, to a live web map using the GIS software and analysed and interpreted to illustrate the ecological importance of the mangrove forests. Students were then required to communicate their findings, in the style of a multimedia campaign, as part of the end of unit assessment. Although the focus of curriculum development in the emirate of Abu Dhabi shifted focus away from an inquiry-driven approach in 2015, the use of inquiry-based activities integrating GIS technologies continued until 2017. The *Houbara and Mangroves* projects continued to be offered to all government schools in the emirate, on an optional basis, and teachers used the outcomes of these projects as assessment evidence for the students' coursework component of their final science grade. To date, no formal assessment regarding the effectiveness of these GIS projects has been carried out but, in 2015, GIS technologies were formally added to the curriculum as an elective, inquiry-based subject termed 'Geoscience' in Abu Dhabi government schools (Abu Dhabi Education Council, 2015).

3D Printing

Currently, 3D printing is something of a 'hot potato' in educational technology, with various research teams internationally working on training both teachers and students alike in the skill of using and applying 3D printing. Lecturing and other

teacher-centred practices are becoming outdated because they cannot cope with the demands of a world increasingly dominated by technologies (Hilbert & Lopez, 2011). Memorization and rote learning are being replaced by other skills such as industrial skills, creativity and innovation which aim to prepare students for their future careers. One of the emergent technologies that can foster this creativity and innovation is 3D printing. During the printing process, objects are created by adding layers which is why 3D printing is considered an additive manufacturing type of technology (Kaur, 2012). As 3D printing has become more user-friendly and readily available to non-commercial users (Griffey, 2017), schools have begun to use 3D printing as a way to promote interdisciplinary and enhanced educational experiences (Sansing, 2015).

In the UAE, an example of Project Based Learning (PBL) has been used in Higher Education as an additional teaching practice. Students presented their assignments in different ways including printed 3D objects. The results of this experience, performed by students from a higher education institution in the UAE, were presented by Mohammed (2017) as providing a 'catalyst for an effective and efficient process-oriented quality education where students are active individuals managing their own learning and having fun in the process' (p. 1). Another project being developed in the UAE attempts to create 3D printing objects from 3D reconstructed models using a low-cost Kinect sensor. This 3D system, named *From Sense to Print,* aims to 'generate ready-to-print 3D models of objects without manual intervention in the processing pipeline' (Figueroa, Dong, & El Saddik, 2013, p. 4897).

In the UAE, 3D printing is being introduced in selected schools by the educational authorities with the aim of integrating this emerging technology into school subjects. A research project conducted in four primary schools in Abu Dhabi explored the impact, strategies and efficacy of 3D printing in those schools. In the project, 3D printing opportunities were identified and integrated into existing science, math and English curricula. Teachers were asked to create lesson plans that included 3D printing activities with the aim of improving students' spatial ability, performance, motivation and STEM perceptions (Khine, Ali, Santos, Gromik, & Hill, 2017).

STEAM (Science, Technology, Engineering, Arts and Mathematics)

STEAM is an educational approach to learning which goes a step beyond STEM to include the creative arts. Menano and Fidalgo (2017) describe the ways in which art and technology 'go hand in hand enhancing creativity and their relationship is often integrated in the educational setting', (p. vii) espousing the underlying philosophy of STEAM processes. There are a multitude of ways in which the arts can be linked to the other elements of STEAM. The emerging domain of robotics offers creative play strategies for engaging young children with the technology and engineering components of STEM. Sullivan, Strawhacker, and Bers (2017) wrote about the way in which robotics can facilitate the integration of engineering and technology. They also found that 'when implemented thoughtfully, robotics is a creative medium with the power to engage young children in the arts and humanities' (p. 231). A study by Grant and Patterson (2016) detailed a partnership involving a natural history museum

and art gallery, where upon an STEAM learning program integrated science and art, and resulted in a number of STEAM events which merged the two. The writers gave strongly scientifically driven examples such as allowing students to deepen their 'understanding of caterpillar defences, fish ecomorphology, and pollinator biology' (p. 144). The potential of such work to develop skills in, for example, critical thinking, was examined. Others approach the implementation of STEAM through a more structured lens, using visual and art analysis as core program aspects with the tools of mathematical and scientific thinking used in the service of goals (Glass & Wilson, 2016). Glass and Wilson wrote about the way in which integrating these subject areas becomes collaborative through combining strengths of the different fields, with their aptly entitled article 'Collaboratively learning our way to improved STEAM integration'. Although we were not able to find significant literature on the use STEAM in schools the UAE, other than some examples of using 3D printing devices to create art, anecdotally and from school experiences, we believe that this is occurring sporadically. Higher education institutions can help by partnering with school practitioners in order to document and publish research in this new field. This brief literature review hints at the STEAM possibilities for UAE schools. This is particularly true given the huge emphasis on arts and culture in the UAE; a wonderful example of which was the opening of the Louvre Abu Dhabi in 2017. With other museum and galleries planned in the near future, links between these art institutions and schools hold great potential for STEAM opportunities in the UAE.

Implications and Recommendations for STEM Integration in the UAE

While researching the use and integration of educational technology in the UAE, it was apparent that there is a dearth of published academic work on the actual implementation of technology in UAE schools, i.e. specific ways in which technology was integrated into education and published results on these projects. Where there are publications, as the previous sections have shown, these tend to focus on attitudinal, perception or awareness factors in connection with technology use, often as part of a wider needs analysis after which key suggestions are made. This is in part, presumably, due to the relative youth of the country's educational system and the even younger technology sector, which is still very much in the planning and development stages.

In the previous section, we demonstrated some key examples of good practice in STEM-related work which particularly link science and technology, and put forth suggestions for how these could be integrated into the science curriculum used within the UAE national context. Effective technology integration is based on a combination of different factors such as training, support, investment in infrastructure (e.g. high-speed Internet connectivity) and technological resources. It also depends on the stakeholders' perceptions of technology usefulness and their willingness to

participate in the change process. Several approaches can be used when integrating technology, such as making sure that technology has value and relevancy to subjects and curriculum, and working closely with teachers to ensure that suitable applications are available and used. It is suggested fairly frequently in the available literature that the involvement of faculty to raise and discuss technological needs and support was sometimes inadequate, i.e. that decisions were being made *for* faculty, rather than *with* them. This might be, therefore, an area in which institutions have to develop and improve in order to increase the effective use of technology. Almekhlafi and Almeqdadi (2010) suggest a few steps to increase effective technology integration in schools, including holding regular professional development workshops, increasing collaboration between schools across the country, and giving teachers some freedom and autonomy in the selection and coverage of curriculum resources.

A dynamic whereby the teacher feels less competent and knowledgeable than his or her own students may be a major factor in resisting the application of devices in the classroom. This is where an effective framework for professional development and training becomes critical in supporting teachers to be able to effectively integrate technology into their teaching. In the institution in which the authors work, for example, an e-buddy scheme was piloted in 2016 whereby faculty identified themselves as being highly proficient and knowledgeable in the use of educational technology. They volunteered to partner up with faculty who identified themselves as being less comfortable or skilled. In addition to direct training, this type of initiative could complement and add to a faculty's general sense of comfort and competence, and so more initiatives like these could be taken up by both schools and higher education institutions.

Initiatives to increase the use of technology in schools and higher education must critically fit into an overall vision or mission of curriculum for a particular sector, since it cannot be expected that standalone subjects such as science and IT can carry the task alone. It is this cross-disciplinary communication which we suggest would lead to the successful integration of the 'science' and 'technology' in STEM, in particular.

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Chapter 7
Transformation in English Language Education in the UAE

Melanie Taylor Gobert

Abstract This chapter explores the need for English as a Second Language in the United Arab Emirates (UAE), what benchmark tests reveal about the level of English amongst Emirati students, the history and development of English language provision in K–12 and in Foundation programs in higher education in the UAE, and the growth of private schools with international curricula in English. The UAE has recently unified the K–12 Ministry of Education (MoE) with the previous Ministry of Higher Education and Scientific Research (MoHESR), which was responsible for higher education provided by both private and public tertiary educational institutions. The Ministry of Education began major K–12 educational reforms in 2008 because students coming from K–12 public education to higher education institutions were inadequately prepared for tertiary studies in the medium of English. This resulted in large amounts of funding for tertiary education being spent on Foundation preparatory programs. The MoE has recently developed a new school model, the Emirates School Model (ESM), to address this issue. In the ESM, scientific subjects and English are taught through the medium of English from licensed native English-speaking teachers while subjects such as Arabic and Islamic studies are taught in Arabic.

Introduction

Prior to the establishment of the United Arab Emirates (UAE), Britain controlled much of the area of the present-day Middle East, from Palestine to India, including Iraq and Iran, due to the importance of the trade routes of the British East India Company. The Trucial States, as the UAE was known prior to its establishment, was never granted the status of colony under the British Empire, because it was an extremely poor area prior to the discovery of oil and its importance in the modern world. The history of foreign language teaching in the UAE, especially English as a Foreign or Second Language (EFL/ESL), goes back to the start of UAE Ministry

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of Education (MoE) when the country was founded in 1971. Prior to that, there was no established education system such as a ministry or directorate of education under the British. When the country was founded, one of its first orders of business was to establish a Ministry of Education (Suliman, 2000). With that founding, the first English language curriculum was imported from the neighboring Emirate of Kuwait (Suliman, 2000). The historical British presence, along with the spread of English by American pop culture and globalization, and more recently the Internet, accounts for English being the additional language of choice for Emiratis.

In 2006, Graddol estimated that 2 billion people worldwide would be learning English in the next 10–15 years and that the situation would "be one of many ages and many needs" (Graddol, 2006, p. 14). He forecast that the age of learning English would begin earlier and earlier in school systems worldwide and, at that time, "English Only" summer camps were beginning to appear in Korea, Japan, and China (Manzo & Zehr, 2006), and European children were beginning to study English in elementary school, estimated at 73% in 2009–2010 (Devlin, 2015). UAE MoE schools are following worldwide trends in their reform attempts to improve English language teaching in schools and teach scientific content subjects through the medium of English. More and more Emiratis are choosing to send their children to private K–12 schools to master English prior to university (Al Hameli & Underwood, 2014).

English for Work and Study

The importance of English as a Second Language (ESL) in the UAE and the Persian Gulf region is evident in the curriculum of the schools (Al Kitbi, 2006; Al Sayegh, 2004; Kharma, 1998). English is the medium of instruction for all government university departments such as engineering or medicine, with the exception of Emirati/Islamic Studies and Arabic. English is also the language of science, technology, engineering and mathematics, fields that will drive the future job market and which the UAE government has targeted for increasing the knowledge capacity of the society. On-the-job English language training is required for Emiratis in ministries, banks, private companies, and jointly owned government and private-sector establishments, especially in the oil industry. Language schools that teach English, including the British Council, English Language Services (ELS), Berlitz, and Eton Institute, abound.

Numerous private and public English-medium colleges and universities have opened branches in the UAE in the past 20 years, including the American Universities of Sharjah and Dubai, Middlesex University Dubai (UK), University of Wollongong (Australia), the New York Institute of Technology, Rochester University of Technology (USA), and the Canadian University of Dubai (University of New Brunswick). With great pride, the Abu Dhabi government became host to branch campuses of two of the most distinguished universities in the world, New York University Abu Dhabi and Paris Sorbonne Abu Dhabi (Lindsey, 2012; Naidoo & Sherif; 2011;

Shamsedinne, 2006). Paris Sorbonne Abu Dhabi offers almost all of its master's programs entirely in English. In addition, many locally owned private universities have opened that offer tuition through the medium of English, and examples include the British University of Dubai, Abu Dhabi University, and Al Hosn University. These various universities mostly serve the expatriate community in the UAE and foreign students, and currently have an enrollment of over 139,500 students studying in more than 70 higher education institutions (Masudi, 2017).

The three major government tertiary institutions, Higher Colleges of Technology (HCT), Zayed University (ZU), and United Arab Emirates University (UAEU) offer tuition through the medium of English to Emirati nationals seeking higher education qualifications in various programs such as Business, IT, Health Science, Engineering, Education, and Media. Although there are some non-Emiratis enrolled in these institutions, their numbers are very few. Public tertiary education is more popular than private tertiary education among UAE nationals because they can attend government universities free of charge. Emirati Studies, Islamic Studies, and the Arabic language are taught as part of the core curriculum, but mandatory credits in these courses are minimized and the majority of all content courses (non-English language courses) are taught in English.

Despite the importance given to learning English in the K–12 and tertiary curriculum, the standard of English proficiency among UAE nationals has often been inadequate for entering tertiary institutions or the job market. English replaced Arabic as the lingua franca in the workplace in the UAE in the early 2000s (Randall & Samimi, 2010). The UAE's workforce is made up of over 200 nationalities, many of who come from Asia and Europe, and thus are not fluent in Arabic, in a country where Emiratis make up only 12% of the total population (Zaatari, 2017). Youth unemployment is a real concern across the Arab World today (Nazzal, 2014b), and, in the UAE, Emiratis must master English to compete in the workplace.

Benchmarking and Testing

Before 2008, the HCT, the largest tertiary government institution, with a current student enrollment of over 25,000, denied conferring a university degree on UAE students who failed to achieve proficiency in English as measured by two external EFL/ESL benchmark exams, the Preliminary English Test (PET) and the International English Language Testing Service (IELTS). The PET was used as a benchmark exit exam for students studying in diploma level programs, a two-year post-secondary program at the HCT. In the mid-2000s, the PET exam began to be used mostly with school-age children in Europe rather than adult students. The test materials became inappropriate for adults ESL learners with testing scenarios created specifically for children such as a father and school-age son planning how to fill their time during an airport layover. The UAE countrywide failure rate for the PET was 47% in 2006 (Preliminary English Test, 2006). In comparison, the average failure rate for 50 other countries listed on the exam's website was 21% (Preliminary English Test, 2006).

The external benchmark exam used for conferring higher diploma and bachelor's degrees by the HCT prior to 2008 was the IELTS exam. Students had to achieve an overall IELTS band of 5.5 in order to graduate with their higher diploma or bachelor's degree. Both the PET and the IELTS were abandoned as external graduation benchmarks by the HCT in 2007, and an IELTS overall band of 5.0 became the entry criteria for all students studying at any institution of higher learning in the UAE, whether private or public, according to guidelines first published in 2007 by the UAE Commission of College Accreditation (CAA), a subdivision of the Ministry of Higher Education and Research, MoHESR.[1]

CAA guidelines propose that an IELTS Band 5.0 is equivalent to a paper-based TOEFL score of 500: "for programs taught in English a minimum TOEFL score of 500 (173 CBT, 61 iBT), *5.0 IELTS* [emphasis added], or another standardized, internationally-recognized test that is approved by the Commission" is required to enter English-medium universities (Standards for Licensure and Accreditation, 2011). Band 5.0 users of English are "modest users" with "a partial command of the language," coping with overall meaning in most situations, although likely to make many mistakes while able to handle basic communication in their own work environment or speciality (Understand Your IELTS Scores, 2015).

Prior to the establishment of the CAA, Emirati students entered university Foundation programs, or directly into bachelor's or higher diploma programs, according to their performance on the Common Educational Placement Assessment (CEPA). The CEPA was developed and administered as a standardized placement test by the three government tertiary institutions in the country under the Ministry of Higher Education and Scientific Research's (MoHESR) National Assessment Placement Office (Ismail, 2008). The CEPA assessed incoming high school Emirati students' achievement in English and Math and was originally a paper-based exam, but later developed into an internet-based test without the math component. From 2007, Emirati students who could not obtain the necessary scores on the CEPA exam had the alternative of taking the IELTS exam and getting a band 5.0 to enter tertiary education as outlined in the CAA guidelines. IELTS became a heavily commercialized exam in the UAE and regulations concerning the amount of time between exam attempts were removed. Almost every college and university, private and public, opened a testing center and interlocutors were paid 50 AED (approximately 15 USD) for each candidate interviewed and 350 AED (approximately 80 USD) for rating students' writing in batches of 20 writing sample scripts. The cost of the exam was approximately 900 AED (300 USD) per attempt and Emirati students would often register for five or more attempts at a time, spaced biweekly apart, and considered "luck" a key factor in achieving the required band 5.0, according to anecdotal communications with students. Parents complained about the high cost of this exam with an estimated expenditure of 14 million AED (3.8 million USD) in 2012 (Salem & Swan, 2014). Criticism of students having to take the IELTS and obtain a band 5.0 to enter

[1]The UAE Ministries of Higher Education and Scientific Research and Education were merged into one ministry (MoE) in 2016 (Swan & Hanif, 2016).

tertiary education reached a peak in 2014, causing the government to announce the development of a new national testing system to replace it (Salama, 2014).

The CEPA test, as well as the IELTS test, were replaced by the Emirates Standardized Test in 2017 for college entry for Emiratis to the government tertiary institutions (About EmSAT, 2018). The EmSAT is a standardized computer-based test that was developed after the successful implementation of the computer-based CEPA exam. Only English was assessed using the computer-based CEPA, but the EmSAT contains multiple tests of English, math, and science subjects, and is soon to introduce a test of Arabic. The EmSAT was used for the first time in 2018 to assess both Emirati and non-Emirati achievement in the public and private schools in the UAE at the exiting secondary school grade level (Achieve Test Grade 12, 2018).

The Standard of English

The UAE government became concerned with the poor English language standards among UAE citizens in connection with efforts to nationalize jobs and maintain economic growth in the mid-2000s (Al Kitbi, 2006; Al Sayegh, 2004). This concern was evident in a report on higher education institutions released by the UAE Federal National Council's Committee for Education and Youth and Information and Cultural Affairs in 2004 (Hoath, 2004). The report expressed anxiety over the deterioration in the English standards of UAE students in general (Hoath, 2004).

Government tertiary institutions had been dedicating significant financial resources to equip Emirati high school graduates with the necessary English language skills for coping with academic life at English-medium universities. It was estimated that these Foundation programs (Intensive English, math, and study skills) cost over 300 million AED (80 million USD) per year of the tertiary education budget (Hoath, 2004). The three federal higher education institutions were heavily criticized for this as a waste of resources because one-third of the budget at these institutions was spent on Foundation programs rather than higher education in the major content programs, such as Engineering and Health Science, and research (Salem & Swan, 2014).

Furthermore, tertiary teachers in UAE government institutions have, until recently, shared the experience that most students failed to achieve adequate English literacy standards to study at English-medium universities (O'Sullivan, 2004), despite English being a large part of the K–12 curriculum since 1992 (Clarke & Gallagher, 2008). Many teachers in the GCC region have remarked that their students' weakest skill is reading (Cobb, 2007; Gobert, 2011).

As part of the overarching educational reforms announced by the government in 2008, schools in Dubai participated for the first time in the Program for International Student Assessment (PISA) exam administered by the Organisation for Economic Cooperation and Development (OECD) in 2009 (Ahmed, 2010). Over 5620 15-year-old Dubai students from 134 public and private schools sat the PISA exam for the first time. Dubai ranked 43rd out of 65 countries that participated in the test. The

average reading level for all participants in UAE was Level 1, which signifies the reading level at which students can answer questions in familiar contexts when all relevant information is present and the questions are clearly defined. According to the head of the PISA study, "One-third of the students in Dubai did not reach the baseline Level 2 in reading literacy, which is considered the minimum level required for success in a 'knowledge-based economy'" (Ahmed, 2010).

The UAE as a whole participated in the PISA exam in 2012 and 2015. It fell from 46th in 2012 to 48th place in 2015 in reading. In reading, UAE students scored 434 in 2015, which was 8 points less than 2012 (442) and 51 points less than the OECD average. The exam was given across the UAE to students attending both public and private schools, that is, both Emiratis and non-Emiratis. The PISA results of 2015 were disappointing to the UAE MoE and the Abu Dhabi Education Council (ADEC), a government agency founded in 2005 to oversee K–12 education in the emirate of Abu Dhabi. Both ADEC and the MoE had hoped for a significant improvement in PISA test results due to the K–12 education reforms started in 2008 and the massive government spending to implement them (Pennington, 2016c). The UAE spends about 20% of its national budget on education, about 10 billion AED or 2.7 billion USD.

In addition to the PISA exam, the Trends in Mathematics and Science Study (TIMMS) Report, prepared by the International Association for the Evaluation of Educational Achievement, based on another comparative education international exam was also given to students in Dubai for the first time in 2007. The test specifically measures trends in mathematics and science in economically and geographically diverse schools systems across the globe to inform policy decision makers. The TIMSS report is relevant to the question of language and literacy in the UAE as it also documents a relationship between achievement in math and the number of books in the home. The exam is given to pupils in grades 4 and 8. Students who have over 200 books at home score an average of 486 points. Students with between 101 and 200 books score an average of 480 points. Students with 26–100 books score an average of 464 points and those with 11–25 books at home score 436 points in average. Students with less than 10 books at home have a 413-point average (Sankar, 2009). The report found that Dubai pupils had fewer books on average than across the globe and that the majority of students had fewer than 25 books in the home (Sankar, 2009).

Within a few years of the educational reforms started in 2008, the government announced that the costly intensive English programs at government tertiary institutions, which most students needed in order to study content and programs through the medium of English, would end in 2018 (Al Hameli & Underwood, 2014; Salem & Swan, 2014). Education experts claimed that this decision would improve the standards in high school and cut costs by eliminating the Foundation year at government universities (Salem & Swan, 2014). However, in July 2017, the government announced that plans to phase out the Foundation year for Emirati university students attending government tertiary institutions by 2018, was postponed until 2021 (Pennington, 2017a). A higher education leader at the HCT said that there was an improvement of 3% of students who were college ready in 2016 (23%) compared

to only 20% in 2014, so the educational reforms announced in 2008 were beginning to be effective (Pennington, 2017a), just not sufficiently to abandon the Foundation year for 77% of the Emirati students entering government tertiary education in 2016. Major educational reform efforts usually take some time to achieve their goals.

History of English in the UAE K–12 Curriculum

When the UAE was founded in 1971, the government took over 47 schools that had been established by various political interests in the region. There was no country before that, just a collection of Emirates that were not governed, but "protected" by the British government. The British did not establish a ministry of education or directorate of education during the 300 years of their presence in the area. Five different curricula, from Kuwait, Egypt, Qatar, Jordan, and Saudi Arabia, were used in these schools and their respective governments provided the curricula, teachers, and textbooks free of charge as aid to the UAE (Suliman, 2000). Khateeb (2016), who is Jordanian of Palestinian origin, writes of being recruited in Egypt by the Kuwait Ministry of Education to teach at the first school in Abu Dhabi in 1959. The development of these schools brought art and physical education into the traditional curriculum of religion, Arabic, social studies, math, and science, with English being added in middle school in 1971 (Suliman, 2000).

Suliman (2000) writes that the English curriculum went through three phases from 1971 to 2000. First, the *Longman* series, coming from the Kuwaiti Ministry of Education, was used without any adaptation. Second, Longman developed the *Crescent* series specifically for the Emirates, and third, in 1990, the National Curriculum came into effect. When this came into effect, choices became limited and teachers were expected to stick to the mandated textbook (Clarke & Gallagher, 2008; Ridge, Kippels, & Farah, 2017), which was by de facto the curriculum. Teachers had to be on a certain page on a certain day and were evaluated for teaching performance according to criteria such as whether they wrote the date on the board in English before beginning the lesson (personal communication).

The extensive school reforms started by the UAE MoE in 2008 were not the first attempts to "reform" the school system. The UAE Ministry of Education implemented at least two previous incarnations of extensive school reform. In 1994, so-called "Model Schools," the first attempt to modernize and reform education in the UAE, followed the nationalization of the curriculum (Shaheen, 2010, as cited in Ridge et al., 2017). These schools were better funded and supposed to be experimental "models" of what a good school should be (Shaheen, 2010). The schools had a higher entry requirement (85%) and the schools were supposed to use English as the language of instruction for mathematics and scientific subjects with an emphasis on using technology in teaching (Ridge et al., 2017). In 2010, principals' complaints about these Model Schools ranged from a lack of male Emirati teachers and lack of integration of special needs students (due to high entry requirements), to the failure

of the schools to teach math and sciences in English due to poor hiring practices, supposedly bilingual teachers teaching mostly in Arabic (Shaheen, 2010).

In 2007, the Ministry of Education launched a new educational initiative named "Madaras Al Ghad" or "Schools of the Future," which again attempted to focus on improving students' English (Layman, 2011). In this initiative, English was the medium of instruction for math and science with more hours devoted to English in 38 schools across the Emirates (Ridge et al., 2017). However, these schools were discontinued in 2015 due to high cost and poor test results (Jonny, 2015). While student-centered learning and textbooks were introduced in Madaras Al Ghad schools, assessment remained the same, which meant that teacher-centered and textbook driven teaching methods remained (Ridge et al., 2017). There were also challenges recruiting bilingually qualified staff and parents were concerned about what the English immersion would do the students' command of Arabic (Ridge et al., 2017), which is said to be an easy language to speak, especially in the colloquial vernaculars, but a difficult language to master due to the phenomenon of Arabic diglossia (Maamouri, 1998).

The term "diglossia," first used in English by Ferguson in 1959 (as cited in Saiegh-Haddad, 2004), describes a situation where there are different forms of a language, such as a "high" form used for religious or state purposes, and a "low" form used by the working class in everyday life. Arabic, in its literary or classical form, is a very different language from the colloquial or everyday spoken form. In fact, Arabic is sometimes described as "triglossic" because there are two written forms of the language and a third spoken form. The two written forms of the Arabic language are Classical Arabic (CA), which was the language used to write the Quran, and Modern Standard Arabic (MSA), which was a modernization of CA that occurred in the nineteenth century. These two written forms of the language contrast significantly with the colloquial dialects spoken by the different groups that make up the Arabic world (Maamouri, 1998; Saiegh-Haddad, 2004). The colloquial languages are referred to as Spoken Arabic Vernaculars (SAVs). The differences between the three languages, written CA and MSA, and SAVs, are phonological as well as grammatical and lexical (Abu Rabia & Taha, 2006; Saiegh-Haddad, 2004).

In 2009/2010, the "New School Model," (NSM) later renamed the "Abu Dhabi School Model" (ADSM) in 2015 (Pennington, 2015), was launched in the emirate of Abu Dhabi (Ridge et al., 2017). This new school model is now called the Emirati School Model and is being used by all MoE schools throughout the UAE. In this initiative, there was not only an increased emphasis on English in the curriculum but on English as the medium of instruction. Its mandate included bilingual education, a reduction in the number of subjects taught from 13 different subjects to 8, an emphasis on STEM (Science, Technology, Engineering, and Math) and twenty-first-century skills (Pennington, 2015). Since 2010, the government has put a heavy mandate on all educational institutions in the country to emphasize STEM subjects because of the government's ambitious 2030 vision for industry and innovation, although 70% of high school students study the literature stream (Ahmed, 2011b; Nazzal, 2014b) because it is perceived to be easier. In UAE high schools, students can study a literature specialization or a scientific specialization.

One of the many overlapping reforms in conjunction with the NSM in Abu Dhabi, was the introduction of the Public Private Partnership (PPP), an initiative whereby for-profit and nonprofit private school providers and educational management consultancies such as Beaconhouse, CfBT Education, Mosaica, and Nord Anglia were hired by ADEC to run over 176 MOE schools in the emirate of Abu Dhabi after a positive trial with 30 schools (Thorne, 2011). At the same time, ADEC recruited over 940 native English-speaking licensed teachers from the USA, Australia, and the UK to teach in schools as part of the NSM Program (Hamilton, 2010). These teachers were to be the English-medium teachers for English, science, and math.

Prior to the recruitment of the native English-speaking teachers to teach in the schools, the teachers of English in the schools were primarily from the Arab world, and English was not their first language. In the NSM, native English-speaking licensed teachers taught math, science, and English while the Arabic speaking teacher taught social studies and Arabic (Riddlebarger, 2015). Eventually, the PPPs were dissolved after huge amounts of money had been spent on them (Ahmed, 2011a). Large numbers of teachers are usually told every spring that their services are no longer required (Pennington, 2016b), as the MoE looks for new venues to recruit qualified teachers at a lower cost. However, despite all of these educational reforms, exam results remain poor (Abu Dhabi Education Council, 2017) and PISA scores in reading continue to drop (Saman, 2018).

Growth of English-Medium Schools

In addition to the educational reforms taking place in the public K–12 school system, the UAE has simultaneously established English-medium specialist high schools funded by the government that are not part of the MoE, and even funded nongovernmental (private) English-medium schools. In 2005, the UAE government established the Institutes of Applied Technology (IAT) to offer career-based technical education in English. The Institutes of Applied Technology is a corporate body with financial and administrative independence from the MoE, currently managing fourteen Applied Technology High Schools (ATHS) throughout the UAE. The fourteen schools offer tuition through the medium of English with an emphasis on STEM subjects. These schools seem to be better funded than UAE MoE schools and require admissions tests to get in. They are exclusively for UAE or Gulf Cooperation Council (GCC) nationals (Institutes of Applied Technology, 2018) and they currently have an enrollment of 8315 (Reports and Statistics, 2018). The instructors at these schools are highly proficient bilingual speakers or L1 English speakers (Al Noursi, 2013).

Two private school providers are connected to government entities. Aldar Academies was founded by the Abu Dhabi government owned property developer, Aldar, in 2007 when a government school was given to them to remodel and modernize. Currently, it offers a British curriculum through the medium of English to 6554 pupils in seven primary schools with 950 teachers (Pennington, 2017a, 2017b). Aldar Academies is poised to expand to the mid-income range demographic and

offer more technical education (Pennington, 2017a, 2017b). Aldar Academies has also recently been tasked with taking over the management of four high schools previously run by the national oil company, ADNOC (Pennington, 2017a, 2017b). Emirates National Schools (EMS), a private school provider of the International Baccalaureate program, was founded by presidential decree and belongs to the Ministry of Presidential Affairs. Tuition at EMS is in both English, with American Common Core Standards in English, Math, and Science, and Arabic, for Arabic language and Islamic Studies.

The major transformative development in English education in the UAE is the phenomenal growth in the private English-medium school sector (Godwin, 2017). The current number of private schools in the country is 567 (Reports and Statistics, 2018), almost equal to that of public schools, which number 659. One such example of these private schools is the Dubai-originated Global Education Management Systems (GEMS). GEMS was established by a Dubai entrepreneur from India whose schools provide private education for both the low paid workers and the "elite." (Kerr, 2013). GEMS currently has 49 schools in the United Arab Emirates, with 5 different curricula, including British, Indian, and American, from the start of one school in 1980 and approximately 10 schools in 2001.

In a way, parents sending their children to these English-medium K–12 schools have found the "magic ingredient": Students are taught by a native or highly proficient English speaker who use only English in the classroom with students from a very young age. Private schools have succeeded in this endeavor more than the bilingual immersion model adopted by the public schools, which blamed absenteeism, lateness, and late delivery of course books for their failure in final exam results in the first trimester of 2017 (Abu Dhabi Education Council, 2017). Many parents the world over send their children to private schools to ensure a better education. Many parents also make the choice to send their children to school in a language they wish them to be fluent in.

In fact, a report published by the Dubai Knowledge and Human Development Authority (KHDA), showed that more than 60% of Emiratis send their children to private schools, where the fees can reach as high as 45,000 AED ($12,250) (Nazzal, 2014a). The two reasons given for this choice by parents were better quality of education and better English language education (Nazzal, 2014a). The growth rate for private education in Dubai is currently at 10% per year and the number of Emiratis attending private institutions in Dubai is growing at approximately 3% per year (Nazzal, 2014a). This is not without issues, however, most notably a decline in Arabic standards and Islamic culture (Badam, 2018). ADEC and the MoE now require these subjects to be taught in private schools (Pennington, 2016a) and most schools have adapted with programs available for both Arabic and non-Arabic speakers. In addition, the country has introduced moral education to teach ethics, respect, tolerance, and culture (Masudi, 2017) in the new Emirates School Model which will be used by both private and public schools following the MoE curriculum (Zaman, 2018).

Conclusion

The government has recently introduced a plan to approve new private schools with fees ranging from 20,000–30,000 AED (approximately 5000–7500 USD) per year (Zaman, 2018), and there is talk of providing UAE citizens with vouchers for their children to attend private schools of their choice. In addition, ADEC no longer exists as a separate Abu Dhabi government entity but has been subsumed as a department in the MoE now referred to as Abu Dhabi Education and Knowledge Department (ADEK) (Masudi, 2017), whose role will be similar to the Dubai KHDA's role of regulating both private and public K–12 education. The current state of affairs based on placement in the Foundation program and direct entry students into the bachelor's program at one of the government tertiary institutions shows that there is currently a large achievement gap between Emirati students who come from some government schools and private schools in the UAE, with many who attend public schools, especially in rural areas, not making the necessary score of 1100 on the EmSAT even after one year of study in the Foundation program to enroll in tertiary education, although more students are testing in directly to Bachelor level programs. This gap needs to be bridged, and offering vouchers to Emiratis to send their children to private schools of their choice may be one innovative way of bridging that gap. The United States has already begun using a school voucher program, which gives families funds that would be spent on public education (cost per child) to enroll their child in a private school of their choice. If the growth rate of private schools continues in the UAE, a tipping point may be reached whereby the government is no longer obliged to provide public education but can replace it with vouchers for private K–12 education. The government spends more money on funding public education right now than it currently costs for these private schools to function, in part because private educational institutions pay teachers less than federally funded schools.

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Chapter 8
Challenges and Opportunities in Sourcing, Preparing and Developing a Teaching Force for the UAE

Kay Gallagher

Abstract Teacher education occurs along a continuum that encompasses teacher candidate recruitment, teacher candidate preparation, novice teacher induction, teacher professional development, and advanced teacher qualifications. Since the formation of the state in 1971, teacher recruitment and teacher education in the UAE have undergone several stages of development, beginning with the sourcing of teachers from the Arab world, through the establishment of in-country teacher education programs designed to produce native teachers, to the hiring of teachers from high performing school systems in the Anglophone world. Teacher education is quite a challenging enterprise, being impacted by changes in the constantly evolving education system in this young nation. High-quality teacher education candidates can be elusive, and it is difficult to attract nationals to teaching, especially males. Yet, at the same time, there are opportunities for teacher education as the country works valiantly to raise educational standards, including the development of Arabic language teacher education, the provision of continuing professional development around teacher licensure, and induction programs for novice teachers.

Introduction

Teacher education is a multifaceted enterprise. It is comprised of several interconnected stages and components, starting with the recruitment of capable candidates into teacher preparation programs where they develop content knowledge along with general and content-specific pedagogical knowledge and gain classroom-based experience through which they cultivate appropriate dispositions. It continues into the induction and mentoring of novice teachers, encompasses continuing professional development, and incorporates teacher appraisal and career development pathways (Darling-Hammond et al., 2017). In light of the multidimensionality of teacher education, and while this chapter focuses primarily on teacher candidate recruitment and preparation for state schools in the UAE, it also includes discussion of the in-country

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provision of professional development for the many thousands of teachers who work in international private schools. Related elements in the continuum of the sourcing and preparation of teachers for state schools are also discussed, including the recruitment of international teachers, teacher licensure, support for beginning teachers, teacher professional development, and advanced teacher qualifications. The chapter begins with an overview of general models and structural approaches to teacher education.

Models of Teacher Education

Conceptually and historically, teacher education has been divided into three broad international models: the craft model, the applied science model, and the reflective practice model (Wallace, 1991). In the craft model, teacher candidates[1] observe, are guided by, and copy the actions of an experienced teacher in a practice-based apprenticeship approach. In the applied science model by contrast, or as Zeichner (2009) terms it, the 'application of theory' model, the research evidence and theoretical perspectives underpinning teaching are first conveyed by experts to teacher candidates in tertiary level classrooms, and teacher candidates subsequently implement this knowledge in the school classroom.

In the reflective practice model, on the other hand, the two elements of practice and theory are combined: teacher candidates make ongoing connections between theory and practice through input and observation, and through the practice of teaching, as they construct their own reflective understanding while developing their pedagogical skills. Indeed, a major OECD report into international teacher education (OECD, 2017) concluded, perhaps not surprisingly, that this combined model is most highly valued by teachers globally. Moreover, whereas teacher education was once viewed as an individual activity, it is now increasingly viewed as a social practice, and thus the community of practice model (Lave & Wenger, 1991; Wenger, 1998) can be considered as a fourth major model underpinning teacher education, whereby teachers develop and hone their knowledge and skills as members of a specialist professional learning community.

Structurally, there are two main forms of teacher education internationally: the concurrent program form and the consecutive programs form. Under the concurrent form, teacher candidates study both content and pedagogy side by side, supplemented by practicum placements in schools. This type of teacher preparation program is typically done at undergraduate level, leading to a Bachelor's in Education degree. In the consecutive model, by contrast, content knowledge is acquired first through an undergraduate degree in a specialist subject or subjects, and then ped-

[1] In order to avoid confusion between 'students' as learners in school and 'students' as learners in a teacher education program, the term 'teacher candidate' will be used throughout this paper to refer to those who are learning to become teachers. This term is consistent with the language used by teacher education accrediting bodies, such as the US-based CAEP (Council for the Accreditation of Educator Preparation).

agogical knowledge and practicum placements follow in an applied teacher preparation program at the Graduate Diploma or Master's in Education level.

Sourcing Teachers

The history of the sourcing and preparation of a teaching cadre for the state school system in the UAE is examined in the following section. It begins with a discussion of the external sourcing of teachers from across the Middle East to staff the nascent school system, following the foundation of the state in 1971. In more recent years, the UAE has turned to the West for many of its teachers. The section continues with an examination of in-country teacher preparation programs to prepare UAE national teachers. Recent developments in the preparation of teachers for private schools are also addressed.

Recruiting Teachers from the Middle East

When the UAE's state school system was set up in the 1970s, there were no in-country teacher education programs in place. With few native teachers to draw upon, the leaders of the new nation turned to Egypt for pedagogical expertise (Ridge, Kippels, & ElAsad, 2015). The legacy of those pioneering Egyptian teachers is still apparent in some UAE classrooms today, according to Ridge, Shami and Kippels (2017) who claim that it is evident in the prevalence of didactic, teacher-centred classrooms. From the 1980s onwards, as student numbers burgeoned as the population grew, so did the need to hire for teachers from abroad. Egyptian expatriate teachers were joined by teachers from other Arabic-speaking countries including Jordan, Lebanon, Palestine and Syria. The staffing of schools has always been a major enterprise for the Ministry of Education (MOE), for as Gardner noted in 1995, each year more than 25,000 applications were processed, teachers interviewed and intergovernmental negotiations conducted to enable teachers from the Arab world to teach in the UAE. Because salaries were relatively good in comparison to their home countries, and competition strong, 'the best and brightest of the applicants could be and often were employed' (Gardner, 1995, p. 296).

However, these immigrant teachers were employed on annual contacts, with no job security from one year to the next, and were paid 50% less than their Emirati teaching colleagues for the same work (Clarke, 2009). They received little or no professional development; moreover, they were often untrained in pedagogy to begin with (Clarke & Gallagher, 2008). In fact, when Ridge (2010) investigated the pedagogical profile of Arab expatriate teachers employed in UAE state schools, she found that none of the three main countries from which Science teachers were being hired—Syria, Egypt and Jordan—required a supervised school-based practicum or a probationary period, and thus teachers were bereft of any preservice classroom-based training.

Not only that, but their preservice teacher education programs had placed little or no emphasis on pedagogical knowledge, relative to content knowledge. Drawing on data on student performance in Math and Science from a standardised international test (TIMSS, 2008) administered in the countries which had historically provided teachers for the UAE, Ridge (2010, p. 28) concluded that 'The poor quality of students entering teacher education programs in these countries is then exacerbated by equally deficient teacher education programs.' This did not bode well for the learning outcomes of the student body these teachers would teach in the UAE. This issue was soon to be addressed by the decision to source teachers from high performing school systems internationally instead.

Sourcing Teachers from the West

From the mid-2000s, coinciding with the publication of poor student results in internationally standardised tests of performance such as TIMSS and PISA, the UAE turned away to an extent from the Arab world to seek what it termed 'licensed teachers'. As a result, thousands of qualified public school teachers were hired from countries which were recognised for their effective educational systems, as indicated by student performance in standardised international tests, including Australia, Canada, Ireland, the UK and New Zealand. An additional factor in this shift to importing teachers from the West was the perceived need for Anglophone teachers for state schools. This requirement intensified from 2010 onwards due to the switch from Arabic-only to Arabic-and-English instruction in state schools, following the educational reforms in Abu Dhabi state schools which saw Math and Science teaching move from Arabic-medium to English-medium (Badri & Al Khaili, 2014).

Core subjects such as Math and Science had previously been taught through the medium of Arabic by an Emirati or expatriate Arab teacher, and this dramatic switch resulted in hundreds of teachers who were unable to teach through the medium of English being displaced. This was indeed an 'unpleasant outcome' (Badri & Al Khaili, 2014, p. 209), and has been described bluntly as the 'mass firing of the non-Emirati Arab expatriates, many of whom had been teaching in the country for up to 20 years' (Dickson, 2012, p. 205). Moreover, for locally trained Emirati subject specialist teachers at elementary level, it meant the need to retrain as an integrated homeroom teacher who could teach Math and Science through the medium of English (Gallagher, 2011), or, in many cases, to leave the teaching profession altogether. For preservice teacher education in Abu Dhabi, it meant a reorientation of teacher preparation programs. For a time, there were poor job prospects in state schools in Abu Dhabi for graduating Emirati teacher candidates who had been prepared as subject specialists for the existing school system, rather than as the English-medium integrated homeroom teachers of Math and Science which the new school model required. Conversely, in Dubai state schools, Math and Science have continued to be taught through the medium of Arabic, yet preservice teacher education providers

in Dubai do not always have the capacity to prepare teachers to teach through the medium of Arabic, as English is the medium of instruction in higher education.

Investing in Nonnational Teachers

Whereas most countries in the world tend to select, train and hire their state school teachers from amongst their own citizens, the imbalanced demographics of the UAE mean that there are not enough locally trained national citizens to staff its schools, and therefore many thousands of public school teachers continue to be recruited internationally. In Dubai, for example, the population of national citizens is just 9% (DSC, 2016), as against 91% expatriates, while in Abu Dhabi, the national population stands at 19% against 81% expatriates (SCAD, 2017). Coupled with this, the state higher education institutions which house undergraduate teacher education programs are, at present, open to and free for citizens of the UAE only, for the most part, but not for expatriates who make up the bulk of the country's population. There is, however, some recent recognition of the need to invest in nonnational teachers. For example, as part of its capacity-building mandate, the progressive Al Qasimi Foundation in Ras Al Khaimah has launched a scholarship scheme for teachers of any nationality teaching in state schools (Al Qasimi Foundation, 2018). Teachers can also apply for financial support to study a Master's degree or other education course, or to engage in action research. Meanwhile, the state's largest public university, the University of the United Arab Emirates in Al Ain, has launched a scholarship scheme for high achieving expatriate students who were born in the UAE to undertake a STEM teacher education program, if they commit to teaching in a state school upon graduation (UAEU, 2018).

Preparing Emirati Teachers

The in-country preparation of national teachers has been a vital educational endeavour for the UAE, parallel to the recruitment of a teaching cadre from overseas. Given the task of fostering a national identify for the newly formed state, the preparation of the first Emirati national teachers who would imbue children with UAE national identity was a necessary step in nation building (Findlow, 2005). Although student academic attainment is now seen to be a major goal of schooling in the UAE, in keeping with dominant international neoliberal values (Cochran-Smith et al., 2018), cultural transmission has traditionally been viewed in the UAE as one of the primary goals of education.

Initially, in order to build up a cadre of national teachers, according to Gardner (1995), nationals who wished to teach in state schools were not required to have completed a college degree, nor were they required to have completed a teacher training course. All that was required was a secondary school certificate, a common situation

in other countries around the world during the very early phases of development. Not surprisingly, this low bar did not bode well for the quality of schooling, nor indeed for the status of teaching. A decade after Gardner's observations, however, the situation had improved immensely with just 8% of teachers in Abu Dhabi schools having no first degree (Badri & Al Khaili, 2014).

Soon after the formation of the state, two-year teacher training colleges were established by the Ministry of Education in 1979, and for several years these colleges produced the only locally trained and qualified Emirati teachers. By the mid-1980s, however, the Ministry of Education had handed over responsibility for teacher education to the University of the United Arab Emirates (UAEU) which was established in Al Ain in 1976. Initially, Bachelor's degree holders from the university's colleges of Arts and Science were offered teaching positions in state schools, even though they had no pedagogical training, in an effort to build up the national teaching corps. This situation was not unique to the UAE, for, as Gardner (1995, p. 289) noted

> Among the more daunting problems facing educators and policy makers in developing countries is that of finding ways and means to insure that a quality teaching force is available for schools. …This 'tug of war' between quantity and quality is one of the persistent and dominant themes in teacher education worldwide.

The next tertiary institution to start in-country teacher education was the multi-campus Higher Colleges of Technology (HCT), founded along North American community college lines in 1988, and initially offering Certificate, Diploma and Higher Diploma program options only. In 2000, in response to a recognition that teaching in UAE schools needed improvement (Clarke, 2006), HCT launched a Bachelor of Education program to prepare Emirati students to teach English to young learners in schools, English being one of the college system's areas of expertise. While the college system itself had been set up with Canadian consultants, the teacher education program was developed with the University of Melbourne, Australia, lending a wide global perspective that typifies contemporary teacher education in the UAE.

Following that, the next in-country teacher education initiative to be established was the College of Education at Zayed University in 1998, an American-style liberal arts institution with campuses in Abu Dhabi and Dubai, offering undergraduate degrees in Math teaching, English teaching, and Early Childhood Education, as well as School Social Work, and later adding Master's degrees in education. This was followed by the country's first dedicated teachers' college, Emirates College for Advanced Education (ECAE), set up by Abu Dhabi Education Council (ADEC) in 2007 in consultation with Singapore's National Institute of Education, when the country looked eastwards instead of westwards for teacher preparation expertise. Although this new institution offered a Postgraduate Diploma in Education for content degree holders (following the consecutive model of teacher education), most students were enrolled in a Bachelor of Education, the same concurrent model of teacher preparation as in the other state-run teacher education institutions wherein teacher candidates learn both subject matter and pedagogy at the same time.

School-Based Preparation of Emirati Teachers for State Schools

As we have seen, the traditional model of preservice teacher education in the Arab world tended to follow the applied science or applied theory model which included little, if any, engagement with school classrooms. By the end of the 1990s, however, this approach was seen as deficient. For example, a report on the quality of English language teaching in state schools in the UAE, focusing on locally trained teachers from the country's largest university, recommended that initial teacher training needed to include extensive and structured teaching practice in schools (Loughrey, Hughes, Bax, Magness, & Aziz, 1999). Thus, from the start of the 2000s onwards, UAE universities and colleges began to focus on the combined reflective practice model and sought to merge theory, research and practice elements. However, there was initially some misunderstanding and resistance towards teacher candidates practicing in schools during their programs of preservice study. Sowa and Vega (2009), for example, addressed the challenges faced by teacher candidates in gaining acceptance during placements in state schools, while Gallagher (2007) noted that public schools initially struggled to provide effective sites of mentoring for teacher candidate learning, due to the numbers of unqualified and underqualified mentor teachers in schools. Moreover, school teachers in general at that time tended to favour teacher-centred approaches, and Emirati teacher candidates who attempted to implement more learner-centred approaches were often misunderstood (Gardiner Hyland, 2014).

School-Based Preparation of Teachers for Private Schools

More recently, a strong version of the craft or apprenticeship model of teacher education has emerged in the UAE, primarily in response to the need to source thousands of teachers for the burgeoning private education sector, but also to upskill practicing teachers in all sectors to meet new teacher licensure requirements, a development which will be discussed later in the chapter. One example is the *Teacher Learning and Leadership for All* (TELLAL, 2018) initiative, a teacher training and professional development organisation developed by GEMS, the Dubai-based global for-profit education conglomerate (Sharif, 2013), and described as a 'schools-led, schools-situated model' (Navdar, 2017). Developed in the UK, the SCITT (School Centred Initial Teacher Training) model is a craft/apprenticeship model that leads to qualified teacher status in England but does not confer an academic qualification.

However, it is essential that teacher candidates are provided with adequate space in which to learn from theory and insights from research, as well as being immersed in practice. A fully school-based craft model cannot provide the rounded preparation that effective reflective-based and theoretically—grounded teaching requires (Zeichner, 2009). Moreover, despite recent repeated attacks on tertiary level teacher

education in the US and the UK, and despite concerted efforts in some quarters to move towards purely school-based models, leading countries in terms of educational achievement such as Finland and Singapore continue to espouse a university-based reflective practitioner model that draws on the links between theory, research and practice, with strong school-based partnerships. These countries celebrate their teachers and teacher education institutions (Darling-Hammond, 2017), and student learning outcomes in schools are consistently at the top of the global league tables.

The Challenges of In-Country Teacher Education

Following on from the preceding historical overview of the external sourcing and in-country preparation of teachers for the ever-growing school population in the UAE, the main challenges faced in producing public school teachers locally are next examined in some detail. Despite the desirability of preparing well qualified Emirati teachers for UAE state schools, there are several obstacles in the way. In many ways, these are developmental issues and derive from the fact that the education system is still a young one in global terms. The first of these is teacher candidate selectivity, an issue in many countries. The second is one that is also felt in other countries around the world but is more acutely felt in the UAE: the absence of males in teacher education programs.

Teacher Candidate Selection in the UAE

It is now firmly established in the international research literature that, after student factors are taken into account, high-quality teaching is the most important factor in the effectiveness of any school system (Barber & Mourshed, 2007). It is axiomatic that high levels of student achievement in schools requires high-quality teachers, which in turn requires high-quality teacher candidates exiting school, entering university, and then graduating from university, something of a chicken-and-egg situation. By the 1990s, as concerns about the quality of education in state schools had begun to emerge, issues with the quality of undergraduate teacher education in the UAE were also being raised. There were too many teacher education candidates in the country's largest university, according to Gardner and Abu Libde (1995), who stated that they were 'among the university's weakest' (p. 307). Moreover, Gardner (1995, p. 298) suggested that in an effort to increase the national presence in state schools, 'Hiring officials too often have sacrificed quality considerations in their efforts to lure nationals to the teaching fold; bluntly put, too many national teachers hired over the past 25 years have had qualifications below any reasonable international standard.'

Indeed, educational leaders continue to be critical of the quality of locally trained novice teachers, according to Ibrahim (2012). Questions about teacher quality persist, and it was reported that tests of teacher language proficiency conducted by ADEC

in 2008, for example, found that 'no English teachers meet the … minimum requirements for English proficiency' and that 'the Arabic language test results show that only 7% of teachers reach the "qualified" level' (Badri & Al Khaili, 2014, p. 202).

Clearly, this is a challenge for all of the providers of initial teacher education within the UAE. Indeed, teacher candidate quality is perceived to be an issue for all the Gulf countries, according to Barber, Mourshed and Whelan (2007), who contrast the highly selective entry requirements for teacher education programs in high performing education systems such as Singapore and Finland with the much lower selectivity of those entering teacher preparation programs in the GCC countries. There are numerous reasons for the reluctance of high-achieving native students to enter teacher training programs in the UAE. First, the salaries offered to teachers relative to other occupations do little to attract strong candidates who can earn much more money in other sectors (Riddlebarger, 2015). Second, teaching has a lower status amongst the Emirati population than other professions (Buckner, 2017; Riddlebarger, 2015). Thirdly, there is the psychocognitive challenge of turning previous learning on its head. As Thorne (2015) has observed, even if stronger calibre Emirati students chose to study to become teachers, teacher education would still face the challenge of overcoming the impact of their long apprenticeship of observation (Lortie, 1975), as former learners in underperforming schools. Fourthly, once teacher candidates are placed for practicum experiences in state schools, they often face unsettled school conditions, due to what one researcher characterised as a 'series of policy changes often hastily implemented' (Thorne, 2015, p. 32). Such conditions can cause many to have second thoughts about teaching as a career, and to seek alternative employment upon graduation. Moreover, when Dickson (2013) surveyed almost 500 female Grade 12 Emirati students in state secondary schools in Abu Dhabi about teaching as a career, she found that they considered it to be a demanding, difficult, and unappreciated occupation—and only 3% of them said they were planning on teaching as a career (Dickson, 2013).

In a similar vein, another teacher education researcher, Riddlebarger (2015), outlined the challenges of preparing national teachers for a rapidly changing school system. She too noted that preservice teacher training programs struggled to meet changing requirements, including the challenge faced by Arabic-speaking national teacher candidates in meeting new English language proficiency requirements for employment in Abu Dhabi state schools. Indeed, when O'Sullivan (2015) interviewed Emirati national teachers, she found that they felt disenfranchised and marginalised, and were fearful of displacement by the arrival of Anglophone teachers into the linguistically reengineered school system in Abu Dhabi, following the school reforms initiated in the mid-2000s. On the other side of the bilingual coin, there are concerns across the country as well about teachers' ability to provide effective models of Modern Standard Arabic. A further challenge to high-quality initial teacher education programs is a cultural one: many students are enrolled in teacher preparation programs because of parental or spousal preference for the secluded, all-female environment of gender-segregated state schools for their daughters and spouses (Ibrahim, 2012).

Emirati Male Teacher Candidates

In line with the feminisation of the school teaching profession globally, there is an acute dearth of Emirati male teachers undergoing teacher preparation the UAE (Ridge, 2010), and a brief discussion of this follows. A study of the perceptions of teaching held by male high school students conducted by ADEC, as reported by Badri and Al Khaili (2014), found that salary was a major consideration, as more attractive salaries and conditions are available in other sectors of employment. The most concerted effort to attract male national candidates to teaching occurred when the country's first teachers' college (ECAE, as mentioned earlier) opened in Abu Dhabi in 2007 and offered a generous monthly stipend for male students. However, a study of male teacher candidates in their graduating year at the college was not encouraging: out of the six males who remained in the program (representing just 38% of the original male teacher candidate intake), four indicated that they would have preferred to study engineering, but had been unable to gain entry, while two indicated that they didn't actually enjoy working with children, but had chosen teacher education as it was the only option open to them (Dickson & LeRoux, 2012). The latest available statistics for Abu Dhabi, for example, show that just 13% of practicing educators in state schools are Emirati males (SCAD, 2016–17), but most of these are administrators rather than classroom teachers. Disappointingly, and boding ill for the future, by 2018 there were no new male initial teacher education candidates in any of the teacher training institutions in the UAE.

The Opportunities

Leaving the challenges behind, the first opportunity to be addressed in this section is Teacher Licensure, a new development in the teacher education landscape of the UAE. Second, the preparation of teachers of Arabic language is addressed, as Arabic has a special status and role as the first and official language of the UAE and as the language of instruction in many school subjects. The related areas of novice teacher induction, teacher professional development, and advanced teaching qualifications are also discussed.

Teacher Licensure

In terms of structural models of teacher education in the UAE, as we have seen, the concurrent model has been the dominant one to date, with teachers being prepared in undergraduate programs where they simultaneously learn subject content, study educational theory and practice their teaching skills. However, the imminent introduction of teacher licensure is likely to witness a shift in emphasis towards the

consecutive model, because there are many thousands of teachers in UAE schools with content degrees alone, and with no formal teaching qualification and who will need to undertake a program of teacher education in order to meet new teacher licensure requirements.

Teacher licensure has come to be seen as a panacea for the problem of uneven teacher quality in the UAE. A concerted effort to improve teacher quality is underway through the piloting of licensure exams for all teachers in the country, and a license to teach will be granted to those who pass mandatory pedagogical and content knowledge tests. A follow-up report by Thacker and Cuadra (2014) to the original World Bank report (Galal et al., 2008) which highlighted the urgent need for reform of education in the Middle East recommended the adoption of professional standards for teachers and schools. Accordingly, standards for UAE teacher licensure were developed and piloted in 2015–2017, with a plan for every teacher to be licensed by 2021 (Pennington, 2017). Bearing in mind that one of the findings of the OECD report (2017) into global teacher education was that a smaller proportion of UAE-based teachers have completed a teacher education or training program than in most other countries, with a ranking of 28 out of 34 countries, this is an important initiative towards raising the bar on teachers' pedagogical knowledge.

The Ministry of Education has made concerted efforts to involve all of the tertiary teacher education providers in the development of the licensure system, a welcome development in harnessing collaborative expertise. Collaboration is something that leading teacher educators internationally are calling for in an effort to move beyond increasingly narrow definitions of teacher education accountability (Cochran-Smith et al., 2017). That being said, there is the danger that a teacher licensure test will reduce the complexity of teaching to a set of multiple choice questions; and to counterbalance this, licensure can be accompanied by a teaching portfolio and a robust annual performance appraisal system.

Another important dimension to teacher education and continuing professional development is teacher appraisal, and this is an area in which the UAE has made tremendous strides within a very short period of time. Although it is not possible to discuss teacher and school appraisal in the UAE in detail here, it is worth noting that the Dubai School Inspection Bureau, part of the Knowledge and Human Development Agency, has since 2007 helped raise the standard of private school education considerably through school-level inspections in Dubai. Moreover, by 2011, all private schools in Abu Dhabi had been inspected by Abu Dhabi Education Council.

Arabic Language Teacher Education

Arabic is the native language of the Emirati children in the state school sector, yet ongoing concerns about the status of Arabic (the country's official language) are bound up with concerns about the quality of its teaching in schools, which in turn, is impacted by the quality of the preparation of teachers of Arabic. Not only does poor Arabic language teaching impact on students' literacy standards in the native

language itself, but it impacts on learning across subjects, because language mediates learning across the curriculum, and impacts on achievement in other subjects such as Humanities which continue to be taught in Arabic in state schools. Drawing on the 2014 *Arab Knowledge Report* (UNDP, 2014) which highlighted the barriers towards Arab world participation in the knowledge economy, including a weak educational system and a rigid view of the Arabic language, Taha (2017) concluded that 'Arabic language teachers are the product, or most likely the victims, of those same broken educational systems and teacher education programs that fall short of adequately preparing them in content knowledge, pedagogical skills and higher order thinking skills' (Taha, 2017, p. 271).

Furthermore, despite the strides made towards the implementation of reflective practice models in the preparation of teachers in the UAE, Taha (2017) noted that teachers of Arabic for middle and high school still graduate today with no actual pedagogical training. From a global perspective, when Darling-Hammond and her colleagues (2017) examined teacher education in some of the world's highest performing educational systems, such as Singapore, Finland, Australia, Canada and Shanghai in China, they found that a common factor was 'an increasingly intense focus on extended clinical training for teacher candidates' (Darling-Hammond et al., 2017, p. 14), a trend apparent in the preparation of teachers in other subject areas and other institutions in the UAE since the start of the millennium, as discussed earlier in this chapter, yet apparently still lacking in the preparation of Arabic teachers. The sourcing of large numbers of qualified teachers from countries with high performing school systems is not an option for Arabic language teaching, however, due to the scarcity of Arabic teachers in those countries.

Novice Teacher Induction

Another area of opportunity lies in the induction of novice teachers. Once qualified and licensed, the experiences of novice teachers during the early years of teaching are known to determine whether they remain in the profession (OECD, 2014). As such, teacher induction is now properly viewed as an integral part of the continuum of teacher education (OECD, 2017). This is an area in urgent need of development in the UAE, as Ibrahim notes (2012). At the time of writing, there is no such support structure in place, although Sowa and Vega (2009) reported that the College of Education at Zayed University had sought to establish a support network for its graduating novice teachers during their first year in the field. Somewhat confusingly, in the OECD's international survey of teacher education (OECD, 2017), a larger proportion of teachers in the UAE reported having taken part in a formal induction programmed compared to most other countries (70.9%). This is likely, however, to refer to a mandatory one-week induction program at the beginning of the school year, as will be discussed in more detail below, but no formal support program currently exists after that brief initial orientation. This brief discussion of novice teacher

induction leads to consideration of the role of teacher professional development as part of the continuum of teacher education, to be discussed in the next section.

Teacher Professional Development

Professional development (PD) is vital to keep teachers abreast of new curricula, up to date with new approaches, and refreshed around new thinking in education. It is essential to continuously build upon the knowledge, skills and dispositions formed during initial teacher education. Moreover, it is known that the availability of high-quality PD helps attract and retain good teachers (Lynch, Hennessy, & Gleeson, 2013). Teacher retention is an increasing challenge for schools in the UAE, given the globally competitive market for high calibre teachers for international schools. Exact figures on teacher attrition rates are hard to obtain—an OECD report, for example, is uncharacteristically vague, stating only that UAE 'schools struggle with high teacher turnover rates' (OECD, 2015a). School inspection reports include only qualitative remarks rather than actual statistics on teacher turnover in the UAE. In the highly competitive market of private international schooling in Dubai, high teacher turnover (largely due to salary competition) is increasingly recognised as a barrier to raising school standards. Meanwhile, teacher attrition rates are also high amongst Emirati teachers in state schools, and attrition rates spiked in Abu Dhabi when English-medium teaching was introduced into schools in 2009/2010 (Dickson, Riddlebarger, Stringer, Tennant & Kennetz, 2014).

Professional development provision can assume many forms, including informal and formal discussions and meetings, workshops, moderation sessions, symposia, seminars, conferences, courses, professional networks, classroom observation with feedback, and mentoring, and can occur in face to face, online, or in blended learning modes. PD assumes especial importance during times of profound educational change, such as the UAE has undergone since the start of this millennium. However, a survey by ADEC in 2008 found that teachers had few options for professional development, and felt they received little developmental support from inspectors who visited classrooms regularly to ensure adherence to the centrally-mandated curriculum (Badri & Al Khaili, 2014.)

Yet, a few years later a study by Litz and Scott (2016) found that educators in the UAE believed that teachers were encouraged and supported in engaging in professional development. Indeed, the OECD'S TALIS international survey of teachers found that the UAE had one of the world's highest levels of teacher-reported engagement in professional development, at 92% (OECD, 2015b). This high figure is likely due to mandatory professional development at the start of each new term (Buckner, Chedda, & Kindreic, 2016). For state school teachers across the UAE, there are three mandatory professional development weeks, at the beginning and end of the two teaching semesters. Teachers choose individually from a menu of courses; however, there is no thematic focus or whole school focus. In fact, a qualitative follow-up study based on interviews with UAE teachers found that they felt that much in-service train-

ing was redundant, repetitive, or poorly delivered (Buckner et al., 2016). Moreover, a study of school leaders' attitudes towards the extensive PD they had undergone in Abu Dhabi during the reform period suggested it catered insufficiently to their needs around the new school inspection model, which included self-evaluation and a school improvement plan (Blaik Hourani & Litz, 2018).

Like much else in education in the UAE, the provision of professional development varies depending on the sector and the emirate. In the state school sector, until the reunification of the school system under the MOE in 2016, the ministry was responsible for PD for teachers in state schools in Dubai and the Northern Emirates. In Abu Dhabi, ADEC was responsible for PD until 2016 when the council was designated as a department of the Ministry of Education. Since 2009, teachers in Abu Dhabi had been required to spend 90 min per week on compulsory PD, mandated by a decree in 2011 (Blaik Hourani & Litz, 2018), and each state school in Abu Dhabi has had a Head of Faculty, mostly from a western school system, whose duties included the provision of weekly, school-based professional development for teachers (Dickson, Kabey, & McMinn, 2015). Meanwhile, the MOE opened a national centre for state school teacher professional development in Ajman, the smallest emirate in the UAE, but accessible by teachers across the country, and ran a week-long PD program entitled 'Teachers' Forum' for 10,000 teachers in 2018 (WAM, 2018).

A different approach has been taken in the robust private school sector in Dubai, where an innovative teacher-led program entitled 'What Works' was introduced by the KHDA in 2012 to allow educators to share insights across an unevenly performing private school system. According to a TIMSS Encyclopedia report (TIMSS, 2015), more than 15,000 teachers attended 500 workshops at 18 events, including events such as 'What Works Mathematics' and 'What Works Science'. By 2018, the KHDA reported that there had been a 54% growth in attendees since 2012. Based on the principles of appreciative inquiry and of collaborative sharing by educators, and following a community of practice model, this is an innovative approach to the need, identified by Thacker and Cuadra (2014), to share good practices across schools so as to raise the bar for lower-performing schools.

Meanwhile, professional development initiatives for Dubai-based private school leaders have also included the Lighthouse initiative, an annual meeting for school leaders to share their successes and challenges. Warner (2018) has called for more such educator empowerment and more situated forms of teacher and educational leadership training and development. In Abu Dhabi, a study of the perceived effectiveness of PD by state school leaders concluded that effective PD should be 'holistic, collaborative, ongoing and continuously relevant to the demands of school reforms and improvement' (Blaik Hourani & Litz, 2018, p. 12). Providing for this in the state school sector represents a big challenge, however, especially in light of the frequency and speed with which educational changes are made.

Advanced Qualifications for Educators

Teacher education, as we have noted, encompasses the development of advanced career pathways, including educational leadership, educational policy making, and teacher preparation, all of which require advanced qualifications. Indeed, in some flagship countries, most notably Finland and Australia, classroom teaching itself has now become a Master's level profession. In the UAE, Badri and Al Khaili (2014) report that less that 3% of teachers have a Master's degree. A number of state and private higher education institutions offer graduate qualifications in education. At Master's level, there are several in-country programs in areas such as Teaching and Learning, Educational Leadership, and Special Education. However, at Doctoral level (and doctoral degrees are required of all university-based teacher educators in the UAE nowadays), there is a very limited range of in-country options, with only the British University in Dubai (BUiD) and the University of the United Arab Emirates offering in-country Doctorate in Education programs. As the education system evolves and matures, this is surely an area of need.

Another growth area lies in the consecutive model of teacher preparation, wherein a Bachelor's degree in a content subject is followed by a Postgraduate Certificate/Diploma/Master's in education. New providers are entering the field, responding to the growing demand for qualified teachers. For instance, when Dubai's first international branch campus of a QS top 100 university, the UK's Birmingham University, opened its doors in September 2018, program offerings included a Postgraduate Certificate (PGCE) in both Primary and Secondary Education, with options in Math, Science and English (British Business Group, 2018). Meanwhile, the American University in Dubai (AUD) offers a Professional Teaching Certificate 'for teachers, teaching assistants and career changers who are interested in acquiring practical expertise in the knowledge and skills of highly effective teachers' (AUD, 2018).

Conclusions and Recommendations

Sadly, according to an OECD report on international teacher education (OECD, 2017), one in three teachers in the UAE believes that teaching is not a valued profession in society. In the UAE, only 50% of lower secondary school teachers are permanently employed, by far the lowest rate internationally. Only Romania comes remotely close, with 70% of its school teachers being permanent employees (OECD, 2017, p. 240). In fact, in the UAE, almost one in four teachers are employed on year-to-year contracts (OECD, 2017, p. 240). National citizens are the only ones eligible for permanent employment in the UAE. Everyone else is on limited-term renewable contracts, without tenure. It is difficult to see how a sustainable, long-term, high-quality education system can be built upon a floating population of teachers in a low-status profession.

With regard to teacher quality, it is known that the type of teachers who can produce high academic results are, amongst other qualities, high academic achievers themselves. In light of the issues surrounding native teacher recruitment identified in this chapter, high-achieving international students can be recruited and offered training in return for a sustained contractual period of teaching in state schools upon graduation. In addition, as Buckner (2017) suggests, prestigious teacher education scholarships will also attract high flyers, both national and expatriate, at graduate level.

With the advent of teacher licensure, the future content of initial teacher education and continuing teacher professional development programs will be shaped to a large extent by the washback effect from the licensure tests. It is important that the theoretical and research bases of teaching, as well as the cultivation of appropriate teacher dispositions, are not diluted in favour of test preparation. A purely school-based, craft model need not predominate over a combined reflective teacher education model that encompasses research-based content knowledge, pedagogical content knowledge, technological pedagogical knowledge and effective teaching skills. To achieve this, robust partnerships are needed between tertiary teacher education providers, public and private schools, and education authorities.

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Chapter 9
Educating Learners with Special Needs and Disabilities in the UAE: Reform and Innovation

Eman Gaad

Abstract The worldwide movement towards the adoption of inclusive education for all learners in regular mainstream schools is apparent, and the United Arab Emirates (UAE) is steadily heading towards such adoption. The government of the UAE clearly acknowledges the need to educate learners with special educational needs and disabilities (SEND), also known locally as People of Determination (POD), and has made steady steps especially over the last decade to support inclusive education for such learners. This chapter offers an overview of the current status of educating learners with SEND in the UAE with a specific focus on recent transformations and innovations in inclusive education in the UAE. It then sheds light on three of several initiatives that are considered innovative and "turning points" in the pursuit of effective inclusive education in the UAE. The chapter explores the excitement, the anxiety and the associated challenges that accompany change when reforming education systems, especially when adopting a natural but bold move like inclusive education in a fast developing country.

Introduction

The Salamanca Statement—which came forth at a conference organized by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 1994—adopted a framework of education as a basis for societal progress (UNESCO, 1994). Salamanca reminded governments that children with disabilities and difficulties were a part of the larger group of the world's children, and that inclusion and participation of all children were essential to human dignity and the concept of human rights. It also emphasized inclusive schooling as a major player in the achievement of these targets and advised governments to adopt this concept as law or policy, unless they were absolutely unable to do so. Taking this in mind, the move towards inclusive education in the UAE came later and was crowned by several pieces of leg-

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islation that started with the Federal Law 29/2006 (Ministry of Social Affairs, 2006) which was considered a breakthrough as it was long-awaited and came after almost 25 years after the initial law to establish special classrooms in mainstream regular government schools in 1981. The 29/2006 federal law came in direct response to the UAE's ratification of the United Nations Convention on the Rights of Persons with Disabilities, known as the UNCRPD (2000).

The government made every effort to comply with the ratification as the UAE has a history of complying with all United Nations conventions and resolutions, despite the country's relatively young age. The country also has a good record of investing in its people. Mittler (2000) argues that investing in education is the single most effective means of raising the standard of living and improving the health of the nation. In particular, the UAE responded to article 33 of the UNCRPD that instructed all parties to establish a national framework to support the implementation of the convention and spared no effort to action it. In the article, each country is obliged to establish two mechanisms, one to coordinate between its different governmental organizations, and another to monitor the implementation of its national legislation. Three committees were formed by the concerned ministry, known at that time as the Ministry of Social Affairs. One committee was for education, another for employment, and the third was for health to oversee the implementation of the legislations and policies and to ensure that services are provided to people with disabilities (PWD) in those three vital areas.

The law was then amended in response to advocates and NGOs to substitute the term "people with special needs" to "people with disabilities" in order to ensure provisions and services for any of the categories of disability, as decision makers struggled with identifying special needs due to the wide range of abilities/disabilities that might fall under such term. Therefore, Law 14/2009 was issued to alter the terminology to *people with disabilities*. Across the country, local authorities battled to action the law, and initiatives such as "My Community" in Dubai to make Dubai a disability-friendly city were popular (Dubai Executive Council, 2017). The term *people of determination* (POD) or *the determined ones* was yet another breakthrough in 2017 when the Prime Minster His Highness Sheikh Mohammed Bin Rashid Al Maktoum initiated the term to highlight their abilities, and not their disabilities, when dealing or serving people with disabilities. Officially, all documentation was changed to adopt the new term and was enforced in official documents across the country (Government.ae, 2017).

Recent Transformations

Innovation has been a buzz word recently in the UAE and in every government institute there is a designated key figure—and in some agencies and entities an entire department even—that is responsible for innovation. Transformation is witnessed right across the education sector and when it comes to POD, it is well noted now. Abu Dhabi and Dubai are the main two cities that reflect the adoption of inclusive

education, while other Emirates are catching up. The following excerpt from the policy adopted by the local education authority in Abu Dhabi, for example, is evidence of the new way of thinking:

> The State guarantees for the person with special needs equal chances in education in all the educational and pedagogical institutions, the vocational qualification, teaching of adults, the continuous teaching in the regular classes or in special classes; if necessary, with providing the curriculum in the language of sign or Braille and any other methods as necessary. The special needs do not constitute intrinsically an obstacle hindering from applying to enroll, join or enter any educational institution whether governmental or private. (ADEC, 2012, p. 4)

Equally, according to the Dubai inclusive education policy framework (KHDA, 2017) for example, provision for students of determination must be visible and documented, and it is directly tied to school ranking in the annual inspection system. An inclusion audit that is connected to additional detailed evidence must be embedded in the policy and culture of the school. Many schools now adopt different modes of communication to reflect inclusive education for students of determination, such as having a POD-friendly school website. Many schools now show how they welcome students of determination to the school. Some schools opt to alter the school vision or mission statement—or statements about admission—to be friendly for all learners, including POD. By default nowadays, promises of access to appropriate provision, resources, and curricular options for students of determination must be made and evidence shown to support this. Evidence to support how students of determination have access to high-quality education is now part of the inspection process in Dubai. Abu Dhabi also has clear guidelines for its schools to adopt evidence-based development in the school system to support students of determination.

Any private school in Dubai must now prove that it has developed an effective inclusive education improvement plan. Such plans include identified gaps in provision, actions for improvement, timeframe, and dedicated finance/resources. The inclusion policy makes reference to related local and national laws. A good example is in Executive Council Resolution No. (2) of 2017, *Regulating Private Schools in the Emirate of Dubai*, which makes specific references to articles that support and encourage schools to cater for learners with SEND, such as Article 4 (14), Article 13 (16), Article 13 (17), Article 13 (19) and Article 23 (4).

Professional Development

Internal and external training and professional development courses for school staff, and for teachers in particular, related to inclusive education must now be evident if the school wishes to achieve outstanding in the annual inspection ranking. According to the framework, an appropriate team led by a qualified leader of provision for students of determination must be in place. This individual should be a qualified teacher, hold specialist qualifications in the area of inclusion, and have over 3 years of experience in the field of education. School culture is also something that was indeed transformed

over the past few years. Schools are encouraged to produce promotional materials, and within the school positive images and messages that promote the inclusion of students of determination should be displayed. That touches all the way from the school prospectus to display boards as well as social media posts.

Admission and Accessibility

When it comes to admission and accessibility, one may notice several innovative and transformative indicators. The admission policy of schools must now make clear reference to admitting students who are siblings of students of determination. It should clearly state that admission is not conditional on a medical diagnosis. The school simply must show that it has a diverse student population, including students of determination with a range of needs. The UAE also transformed the entire identification and assessment procedures. Teachers must now have access to a screening tool or checklist that identifies an educational need upon entry to school or during the school year. The names of the screening tools or checklists used must be declared and then approved by the inclusion action team and inclusion champion. Recommendations from medical assessments should be included in the Individualized Education Program (IEP). Sample IEP files that include medical reports should be available to all involved.

It is also noted with the new transformations in the inclusive education system that schools are being forced to regulate any additional fees charged because of the exceptional learning needs that a child may have. Where additional fees are charged to parents, a supplementary page to the parent school contract should be in place. Such additional fees to parents should represent the actual cost of the services provided. There should be a clear rationale for additional services, including educational objectives and impact measures. Regular review and evaluation of the quality of delivery and impact upon student outcomes, including progress towards intended learning outcomes, are now part of the routine in inclusive schools.

School Leadership for SEND

The regulations in the UAE include clear guidelines about the role of leadership in enabling effective inclusive education. School leaders must prove that they are able to provide evidence of a specific budget allocated for the training of teachers and staff on inclusive education. The IEPs must include parents as members of the team responsible for its development, and minutes of IEP meetings/discussion and signed copies of all IEP for all registered learners with SEND should be kept at hand and updated regularly.

In 2017, there was also an emphasis on the role of the governing board as it is now mandatory that the board designate a governor for inclusive education while

before there were no such specification, and governing bodies simply relied on the "closest" member to the field to look after pastoral care, special education and at-risk students. The governor for inclusive education is now expected to be active in holding the school accountable for the quality of provision and outcomes for students of determination. Governing body meeting minutes should now demonstrate such an active role.

Staffing, Qualifications, and Professional Development

In terms of staffing and resourcing, one can notice a huge transformation over the last few years. An inclusive education support team must now be in place, and such as team should include but not be limited to the school Principal and other professionals in the field of inclusive education. The term "Inclusion Champion" is now a new buzzword as well. Schools are now obliged to name a member of staff to carry such a role with full accountability for day-to-day inclusive education provision. The support teacher and the Learning Support Assistant (LSA) take a different role with more certification and expectations, which differs from previous years when such roles were simply allocated to anyone looking for a job. Parent representatives in the inclusion action team are also something that were recently introduced. Such inclusive education support teams are expected to be actively engaged in improving the quality of provision for students of determination, with a particular focus upon supporting teachers.

The Knowledge and Human Development Authority (KHDA) in Dubai, the regulator for private schools, mandates a staff-to-student ratio to support such students: one teacher for every 200 students enrolled. A copy of the job description, number, and names of support teachers employed as well as the total number of students in the school must now be declared to the governors. School leaders are now expected to provide support teachers at the ratio identified in Dubai's inclusive education policy framework (KHDA, 2017). School leaders must provide learning support assistants at the ratio identified in Dubai's Inclusive education policy framework (1:125), and there should be a clear job description for the learning support assistant's role.

One of the new innovative approaches that supports the adoption of effective inclusive education is external partnerships. Agreements and partnerships with external agencies to develop inclusive education services within the school must be evident. Records of all the names of the partners/external agencies must be in place. With the new legislation, it is noted that schools work in partnership with vocational, higher education and post-school employment entities to ensure transition plans from schools into vocational and/or higher education pathways are in place. To take this further, agreements/letters and the transition of students from each stage to the next one are expected to be recorded.

One can easily witness that the UAE is looking at schooling as the start of a long term professional development plan for the person of determination. The school is now expected to identify and designate a member of staff responsible for career

guidance for students of determination. The school is expected to record the name, role, and qualifications of the designated member of staff. The names of any members of staff who have specific expertise in the areas of inclusion and special education are also expected to be revealed for advice and support of other members of staff with no or minimal experience in such fields.

If a student of determination is unable to access the school's main curriculum, the school is now, according to the new regulations, expected to provide the student with a recognized alternative programme of study. The type of alternative curricula being used includes the UK's ASDAN (Award Scheme Development and Accreditation Network) or BTEC (Business and Technology Education Council) qualifications, or functional skills qualifications, or other entry-level qualifications. This should be clearly stated in the record of the student of determination and the IEP.

The UAE and the Quest for Inclusivity: Exemplars of Practice

Three examples that reflect the current transformation of education of learners with SEND in the UAE are offered here. The three innovative/transformative examples were carefully selected to reflect how policy and legislation on inclusive education are adopted in practice in the country. SEDRA Foundation is one example of a nongovernmental organization that is not for profit, and based in Abu Dhabi (the capital of the UAE). The second example is the Ta'alouf Program that is run by the Al Jalila Foundation, a semi-government entity that is based in Dubai (the commercial capital). The third example is the Emirates Foundation for Youth Development, which is based in Abu Dhabi, but acts nationwide.

SEDRA Foundation

SEDRA Foundation is a nonprofit organization that acts as a management consultancy for public and private institutions and enablers empowering children, teenagers and adults with disabilities, and their families. It was established in 2014 by Her Highness Sheikha Aljazia Bint Saif Al Nahyan. According to its website, the vision is: "People with Disabilities in Abu Dhabi to enjoy a fulfilled life from cradle to grave through positive empowerment and effective inclusion in all aspects of society" (SEDRA). SEDRA Foundation for inclusion is the Abu Dhabi hub for the most current inclusive research and best practices within a global perspective. Its values are based on the Human Rights Framework of the Convention on the Rights of Persons with Disabilities (UNCRPD) assisting the local community emerge by 2030 as a world-class sustainable model for an inclusive society removing sociocultural, economic or political barriers to full and equal participation in all aspects of community

(SEDRA). SEDRA facilitates inclusion through five key program areas: Education, Research, Awareness & Community Support, Family Support and Employment.

The vision of SEDRA Foundation is in line with the National Strategy for People of Determination: "An inclusive, barrier free society ensuing the empowerment and decent life for people of determination" (SEDRA). The term *People of Determination* is seen as a moral boost to all stakeholders, reflecting an Emirati culture distinctly characterized by positivity, tolerance, and ambitious optimism (SEDRA). Inclusive Education is at the heart of all the five areas, and there are several examples of the foundation's commitment to inclusive education. SEDRA tied up with the local education authority, Abu Dhabi Education Council (ADEC), where the main purpose was to train and equip new teachers with the knowledge and skills they needed to facilitate the policy. SEDRA used a well-qualified training team with both local knowledge and international standing in the field of inclusive education to train such new teachers. The research pillar of SERDA Foundation was very important in order to determine the effectiveness of the training program in the field.

SEDRA realized that the number of learners with SEND is on the rise every day due to the growth in the UAE's population (20% of the population in any given society are/could be SEND). There is also an apparent increase in the professional diagnosis of disabilities like Autism Spectrum Disorder, ADHD, and other previously unseen disabilities (Gaad, 2017). Following several meetings initiated by SEDRA with ADEC's Special Education Department, the free-of-charge pilot training programme was proposed by SEDRA in June 2014 and the execution started officially in October 2015. Each batch was delivered in 3 locations, namely Abu Dhabi, Al Ain and the Western Zone of the country. The education authority authorized schools and heads of department to release teachers on designated days through a cascading school communication system for action.

A standardized training programme was designed for SEDRA by experts in the area of special and inclusive education, and was then sent for review to three international experts. Each training package includes three full school days. A total of 249 new teachers were trained over a whole academic year (2015/6). In order to gauge the effectiveness of the program, a random sample of participants were surveyed. Results showed an outstanding positive impact on teachers' attitudes towards the inclusion of learners with SEND in their classrooms. Participants reported gaining knowledge on all types of disabilities that could be found in classrooms, as well as gaining skills in designing, implementing and evaluating an Individualized Educational Plan (IEP) for each child. Participants also valued being exposed to the latest trends and issues in this area.

Another initiative by the SEDRA Foundation was the Shadow Teacher Training Program. The pilot shadow teacher training program targeted those who are interested in becoming shadow teachers or learning support assistants (LSAs), as they are locally known across the UAE for the support of learners with special educational needs and disabilities. The programme was offered in both Arabic and English on a pilot basis in hopes of examining the main issues and areas of improvement that could be used to develop the program on a large, nationwide basis. The 30-h training program was delivered to participating teachers in 2 regions, Abu Dhabi and Dubai, and was

executed by SEDRA over the academic years 2016/17 and 2017/8. The research arm that was tied to the program used a mixed method approach of both qualitative and quantitative data collection to ascertain if the pilot program was effective in terms of knowledge and skills gained by participants to support a child with SEND in a mainstream school. The impact was apparent in terms of changing the attitudes of trainees towards inclusion, gaining knowledge and skills that are vital to the adoption of inclusion of learners with SEND, and most of all skills needed to support the shadowed child in mainstream schools. Evidence-based recommendations for future programs were offered to further develop the program and support SEDRA Foundation with its vision and mandate to support the inclusion of people with disabilities in all aspects of life.

Both of the above SEDRA Foundation programs are considered innovative and arguably transformative as there is a sense of challenging the traditional methods of training teachers in the first one by giving the teachers hands-on experience supported by in-class assignments where newly qualified teachers apply knowledge and skills learned in practice and reflect on their own practice. The second SEDRA initiative also challenged the old ways by bridging the gap in the market. The country desires to be inclusive and learners in schools need the support, with many seeking a professional certificate to become shadow teachers, and so SEDRA responded to the needs of the market as there was a general negative attitude towards inclusive education in the UAE among general education teachers, who at the time believed that special classes should also be provided (Gaad & Khan, 2007). Offering such programmes in both English and Arabic is helpful and empowering to such professionals and most importantly empowering to those young learners in the newly adopted inclusive setting by supplying the professionals needed to support their inclusion in the mainstream school.

Al Jalila Foundation's Parent Training Program: Ta'alouf

The Al Jalila Foundation (AJF) is fully funded by the generosity of donors, and all funds are invested in medical research, education, and treatment in the UAE. AJF approached the British University in Dubai (BUiD)—a nonprofit, research-based university—to partner in a high-quality community development project called Ta'alouf. The programme started in 2014, ran for 5 years and graduated more than 500 parents of children with SEND. Typically, a 4-h session was conducted every weekend for six weeks. The course was delivered in Arabic and in English to cater to the UAE's diverse community. The course was delivered in different Emirates and catered to parents of children with different special needs and disabilities. It was reported that there was a desperate need for parental support (Gaad, 2013), and the course supported the call in a community that AJF generously responded to.

On average, each group consisted of approximately 35–50 parents. At the end of the course, all participants submitted a portfolio that included assignments done over the 6-week period, and a final written report. This portfolio was one of the graduation

requirements set by both the sponsor and the university (Gaad & Thabet, 2016). There was also a research element to measure the effectiveness of the course. Aside from the evaluation that showed satisfaction, parents gaining skills in dealing with challenging behavior and in addition parental support group emerging from being together in the course, there were also several gains. The programme attracted the attention of the media and parents started to advocate to their fellow parents. Fathers gradually became more involved, starting with 2 fathers out of 48 participants in the first course and ending with 16 fathers in the last course. This is in line with international trends where mothers are typically viewed as those who oversee the education of their children while the fathers are seen more of playmates rather than caregivers.

There was also some real evidence of improvement in the quality of life at home following the application of the knowledge and skills participating parents gained and applied in real-life experiences (Gaad & Thabet, 2018). The programme also supported the effective inclusion of children in regular classroom settings, as parental support was one of the issues raised in other studies (Gaad, 2015). The programme ended in 2018 with the possibility of renewal according to demand in the community.

Emirates Foundation: Kayani

Emirates Foundation is an independent organization set up by the Government of the Emirate of Abu Dhabi to facilitate public–private-funded initiatives to improve the welfare of youth across the UAE. In 2012, Emirates Foundation marked the beginning of its new era by adopting a mission that focuses on impacting the lives of young people positively and permanently, and a vision that acknowledges the criticality of youth to the successful socioeconomic progress of the nation. The Foundation has a database of all the young people with whom it engages which is managed and protected intellectually. Emirates Foundation seeks to identify and understand the challenges facing UAE youth in the age range 15–35 years while identifying opportunities for their growth and development. The Foundation aims to develop sustainable, enterprise-based solutions to social issues that help motivate and guide young Emiratis, and also aims to develop their capabilities, confidence, and leadership skills. Emirates Foundation has six programs and one of them is *Kayani* (Emirates Foundation, 2016).

Kayani (which means "my identity" in Arabic) was designed to empower disadvantaged Emirati women who for varying reasons were not able to continue their college education. The women's empowerment program focuses on working with different government organizations and public and private schools. The objective is to provide these women with the tools necessary to become qualified teaching assistants in classroom with SEND learners and create employment opportunities for them. The program is able to achieve its objectives in the following ways:

– Theoretical phase of 6 months course attendance followed by a 6 month practical phase during which participants receive on the job training at government schools.
– All participants are awarded a Teacher Assistant Certificate accredited by the National Qualification Authority (NQA).
– Working with industry stakeholders to secure job placement opportunities for the Graduates.
(Emirates Foundation, 2016).

As reported in Gaad (2017), *Kayani* was constructed as a project that helped the adoption of the UAE as nation to inclusive education of all learners in mainstream schools. At the same time, the project sought to enable nonworking Emirati women to gain the knowledge and skills needed to become teacher assistants across the UAE. The research-based project turned those women into productive employees who contribute to the development of their nation and support the inclusive education policy that the UAE is adopting following the ratification of the United Nation's Convention on the Rights of Persons with Disabilities.

The research-based study that followed the programme showed encouraging results that supported the development of effective inclusive education in the UAE. Participants reported positive course impact on their skills and knowledge (Gaad, 2017). However, Gaad (2017) warned that despite the apparent desperate need for the graduates of the programme in schools to achieve effective inclusion, budgetary constraints and the individual abilities of each participants to support the school and other factors may intervene and hinder the schools from making use of those graduates. On the whole, the programme as an initiative was well received by the community as an empowering tool to transform the lives of those young Emirati women as well the lives of learners with SEND across the UAE.

Discussion

Looking purely from the newly adopted rights-based approach, one can argue that all children have the equal right to learn together. Bruce and Meggitt (2002, p. 368) argue that "children are more alike than different". The UAE as a nation is clearly not only putting legislation in place to enforce the adoption of inclusive education but also creating initiatives and real opportunities to support the effective implementation of such initiatives. A recent tweet by the UAE Embassy in the USA about the Special Olympics hosted in 2019 by the UAE, and the first time for these games to be held in the Middle East reflects how the UAE also would like to affirm its message to the world regarding this matter. The tweet included a picture of the Ambassador himself in line with the country's agenda "*In line w/UAE govt's efforts to promote greater understanding, inclusion & respect for people of determination, there is no better time for World Games to take place in Abu Dhabi & no better partner than @SpecialOlympics*"*—Amb Otaiba at @specialolyUSA training camp in Delaware"* Twitter: @UAEEmbassyUS.

This chapter offers an account on how the UAE is transforming its education system to include and empower all learners. Aside from the legislation, the chapter presented three brief cross-country examples of initiatives illustrating how keen the UAE is to adopt effective inclusive education through transformative projects and programmes nationwide, however, with all new initiatives, more research is recommended to look at the long term impact of any innovative and/or transformative initiative. Several previous studies on issues related to inclusive education in general and factors related to the effectiveness of this relatively newly adopted phenomenon in the country and the region echo such recommendations (e.g., Alahbabi, 2009; Alborno & Gaad, 2012, 2014; Anati, 2012; Bradshaw, 2009; Dukmak, 2013; Gaad, 2004a, 2004b, 2011; Hamaidi, Homidi, & Reyes, 2012). Governmental efforts continue to invest in all people including those with SEND, and education is the way forward. A strategic approach towards inclusion and empowerment is now backed by legislation and the reinforcement of the local and federal laws as well as strategic plans, such as the UAE Vision 2021, the Abu Dhabi Economic Vision 2030, and Dubai Strategic Plan 2021. The Special Olympics that will be taking place in 2019 in Abu Dhabi is also a clear sign of this movement. The Dubai 2020 "My Community" approach that aims to make Dubai an accessible city for all is also being taken seriously. It is hoped that the efforts continue to support the inclusion and empowerment of all learners with a sense of "equity", not just equality. Judging from the current spirit in the country, it is clear that decision makers and those interested in the field are taking seriously UNESCO's *Incheon Declaration for Education 2030*, which sets out a new vision for education for the next 15 years, that states: "Inclusion and equity in and through education is the cornerstone of a transformative education agenda, and we therefore commit to addressing all forms of exclusion and marginalization, disparities and inequalities in access, participation and learning outcomes" (UNESCO, 2015).

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Chapter 10
In Quest of Educational Quality in the UAE

Rana M. Tamim and Linda K. Colburn

Abstract Quality assurance started as a corporate-related process in the 1960s but later became a highly sought-after objective in educational and academic contexts. The growing interest in quality assurance has been the result of government and business expectations, as well as competition in the higher education marketplace. One such growing market for quality assurance is the United Arab Emirates, where public formal education has only existed since the 1970s. This chapter focuses on the quest for what can be considered as the *Holy Grail* within the context of each of the previous chapters in this edited book, namely, quality education. The chapter offers a synopsis of the fast-paced developments and ongoing activities in quality assurance in education in the United Arab Emirates. Federal and emirate-based initiatives will be presented and discussed while reflecting on lessons learned and offering recommendations whenever possible.

Introduction

The current chapter focuses on the quest for what can be considered as the *Holy Grail* within the context of each of the previous chapters in this edited book, namely, quality education. While the concept of quality assurance is not a new one, the attention it has received has grown exponentially in recent years. Multiple variables have influenced this rise with the most prominent being the advancement in technological innovations and the ubiquity of their use. While not a direct cause–effect relationship, technological innovation has increased the need for educational quality assurance while also providing the means to monitor it through data analytics.

When once it took hours or even days for news from across the globe to reach us in our own region, information access currently is instantaneous. Smart mobile

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phone owners can easily post a combination of text, audio, and video items on social networking sites and live stream their activities and events they are witnessing. Such advances have facilitated the sharing of knowledge and information through a continuous and immediate connectedness between individuals around the globe, thus resulting in what might be viewed as a *shrinking planet*. From a government perspective, this increased instant and global news sharing has elevated the attention given to the image propagated about a country's resources and deeds. The situation is furthered by the fact that these changes are taking place at a time when the world has entered the age of the global knowledge economy (k-economy) with its resulting emphasis on knowledge generation (Bagley & Portnoi, 2014). Needless to say, the concept of a "k-economy" increases the focus on a nation's ability to educate its people well for the future they will face. This is of particular importance at a time of continuous change, where the future of any country is dependent on an educated and informed citizenry.

Within academic circles, the fast developments in contemporary technologies are considered to be a driving force and an enabler of globalization (Audretsch, Lehmann, & Wright, 2014). Obviously, technology has impacted students' preferences and skills, public expectations from academic institutions, and the teacher's anticipated role; however, actual change in the educational system appears to come slowly when compared with the rate of change in other sectors. That being said, the past three decades have witnessed numerous initiatives around the globe to update the face of education and raise the standards at all levels and for all learners.

Considering that the education of any country's populace is an important yet costly undertaking, a substantive number of the initiatives address the effectiveness of the educational system with a focus on a return on investment. What government does not wish to assure that the money invested is well spent? More importantly, what government does not wish to assure that the young generation—in reality the country's future—is well educated and prepared to be the leaders of tomorrow? Within such a global environment, it was a matter of time before the notion of quality assurance, originally a corporate-based concept, started gaining attention and attracting supporters within the education sector.

The chapter presents an overview of the fast-paced developments and ongoing activities in quality assurance in education in one of the youngest yet most advanced countries in the world, namely, the United Arab Emirates. Federal and emirate-based initiatives will be presented while highlighting strengths, reflecting on challenges, and offering recommendations whenever possible. Throughout the chapter, it is important to keep in mind that the activities and initiatives are pertinent to a young country where public education originated during the same period as the global quality assurance approach that is being explored.

Quality Assurance: What, Why, and How

Quality assurance is a fairly recent innovation, having begun in the 1960s in the corporate sector, but really only taken hold globally since the late 1980s. Part of the pressure for quality assurance efforts was the rising university enrollment that was seen in the late 1980s, which created a greater sense of urgency for public officials to manage growth and maintain quality (El Khawas, 2007). So, what exactly does quality assurance mean?

Mishra posits the potential conundrum of quality, saying "you know what it is, yet you don't know what it is" (2007, p. 11). Harvey and Williams have suggested that quality does have defining characteristics, such as being exceptional, having consistency, appropriateness of purpose, value for money, and capacity for transformation (2010). Within educational contexts, studies have been conducted to explore the construct of quality from the perspectives of key players, such as students and staff, highlighting the importance of differences in perspective (Iacovidou, Gibbs & Zopiatis, 2009). Yet there remains some lack of clarity around the terminology used to discuss quality assurance, along with a certain amount of misuse of concepts (Vlasceanu, Grundberg, & Parlea, 2007). Some authors would even argue that an agreed upon definition for the term has not yet crystallized (Van Damme, 2004). It is clear that an operational definition will be influenced by the context and QA framework being implemented. Notwithstanding this limitation, we agree with Harvey and Williams that quality assurance in higher education refers to the policies, procedures, and activities that are used to establish the validity and legitimacy of a program (2010). Harvey and Williams also note that an additional purpose of quality assurance is to serve as a source of information for decision-makers and funding agencies. Thus, while there may not yet be a scholarly consensus with regard to the terminology—given the notion of "quality" as a moving target where definition depends on context, time period, cultural values, and role of stakeholder—for the purpose of this discussion we will rely on Harvey and Williams's defining efforts for the concept of quality as well as the construct of quality assurance.

Another clarification is warranted with regards to quality assurance and accreditation, as they are often referred to in tandem. Accreditation has been defined as the process whereby one approved body evaluates the quality of a program or organization with the purpose of recognizing that entity as meeting certain identified standards or criteria (Vlasceanu et al., 2007). While quality assurance is an end goal that establishes the quality and legitimacy of a program (Kinser, 2014), accreditation is a multistep process whereby it can be assured (El Khawas, 2007; Vlasceanu et al., 2007).

Identifying the point at which quality assurance went beyond being a corporate sector process and became a fad in academic institutions is not easy and may not be of relevance at the present time. Nevertheless, it is important to highlight the main factors that contributed to the increased attention, with the most prominent being competitiveness and marketization of higher education and the rise in the influence of business models such as Total Quality Management (TQM). Together, these two

factors have influenced governing bodies and other stakeholders to seek indicators of quality and reliable data about the performance of individual educational institutions. In tandem with the competitive culture that prevails nowadays, government and business expectations of the education experience for future workers and citizenry have also been a lever for the pursuit of quality assurance.

Another manifestation of the global and educational competitiveness is the increased attention given to global rankings of institutions and even countries. The argument is that there is a relationship between rankings, quality, and performance—though not always clear—with quality assurance being a leading approach that impacts an institution's ranking (Sadlak, Merisotis, & Cai Lui, 2008). Moreover, it has been argued that a country's global stature and competitiveness can be enhanced by the rising stature of its local higher education institutions (Bagley & Portnoi, 2014). As a reflection of the above standpoint, and as international recognition of rankings becomes more pervasive, governments across the globe have announced intentions of hosting world-class universities. However, and in parallel with the desire to be known for the quality of the education received by students, there is a growing concern over the rise in new for-profit institutions, rendering quality assurance in academic institutions all the more vital.

The above-presented variables have definitely led to increased attention to educational quality, but the rise of quality assurance as a global trend in academic contexts has been enabled because of the proliferation and accessibility of data in this day and age. With technological innovations and artificial intelligence, the ease with which quantitative and qualitative data of an informal and formal nature can be collected has surpassed all previous expectations. Currently, most stakeholders' activities—administrators, instructors, and students—can be monitored through electronic portals and platforms and examined with powerful data analytics. As such, academic institutions and supervisory bodies have the privilege and authority to monitor and examine various aspects of the learning environment and process. This ability to collate and analyze evidence has rendered accountability a more achievable objective (Sellar, 2015). Given these circumstances and levers, the demand for data about institutional quality comes from many governing bodies and has set the stage for a proliferation of organizations that promise to deliver such data (Sadlak et al., 2008).

Accountability and Quality Assurance

From a general point of view, to be accountable is to be held to a standard of performance and to be responsible for meeting that standard. There may be either positive or negative repercussions for the way in which one meets the standard. However, within educational contexts, what does it mean to be accountable, who is accountable, and by whom are they held to account? In education, we often speak of teachers being accountable with a large focus being given to students' scores on tests. However, Turnipseed and Darling-Hammond (2015) argue that accountability in educational contexts should go beyond the teacher and the students' test scores. They stress that

the time has come for rich accountability systems that will enable the development of the needed creative graduates of the future task force.

For successful academic outcomes, accountability needs to be implemented through a systems approach where all stakeholders in the system are held accountable. Lingenfelter (2003) argues that stakeholders include students with their varying abilities and effort; parents, especially in primary and secondary schools; peer groups and their influence in promoting or discouraging academic performance; teachers and professors with their central role in improving educational performance; schools and colleges with the impact of their academic, administrative, and logistic setups; the business sector with an evolving role from an education customer to an education provider; and finally the government with its power to provide resources and financial support as well as establish educational policies and initiatives. Moreover, academics and researchers argue that teacher education providers should also be held accountable and thus the growing focus on accreditation of teacher preparation programs (Cochran-Smith et al., 2017).

Accountability is usually affiliated with external stakeholders such as accrediting bodies and government agencies (Nicholson, 2011). The processes of accreditation and audits usually make use of gathered data as evidence of compliance with standards and regulations. However, there are also other systems at work with regard to accountability, such as performance based which focuses on outcomes and results, or the value added of the educational experience, and public accountability for the quality of the educational experience (Thacker & Cuadra, 2014). In addition, educators hold themselves accountable to standards of professional practice (Thacker & Cuadra, 2014).

Though quality assurance efforts in the corporate sector have been in place since the 1960s in the western world, it is a more recent arrival on the international scene. Other global actors began appearing during the late 1980s, while the current system of quality assurance in the United Kingdom has been in place since the 90s (Kinser, 2014). Nations in the MENA region are newer players in the quest for quality assurance, but that seems reasonable given the recency of established public education in the region.

Educational Quality in the United Arab Emirates

Emiratis take deep pride in the attention given to education by the United Arab Emirates' founding father Sheikh Zayed bin Sultan Al Nahyan who stressed that "the real asset of any advanced nation is its people, especially the educated ones, and the prosperity and success of the people are measured by the standard of their education." With such a vision and guiding words, and while the education system in the UAE is young, the government has worked tirelessly in just a few short decades to establish a system that serves the national and expatriate population needs. The articulated commitment has been supported by the allocation of substantive funds for education and social development.

In addition, there has been a strong driving force to bring the education system to a competitive place in the international sphere with stepped-up efforts to determine quality assurance. To better provide perspective on the UAE's educational initiatives and advancements in the quality assurance arena, it is important here to shed light on the country's history and the advent and growth of its education system.

The United Arab Emirates

Any discussion of quality assurance in education in the United Arab Emirates (UAE) must refer to origins and growth of the country. Therefore, a brief overview of the transformations that have occurred in the UAE in its first few decades is necessary. The UAE is a more recently organized country in the Middle East, a country that was formed by the joining of seven Emirates, which were known prior to 1971 as the Trucial States. The seven Emirates in the current UAE are Abu Dhabi, Ajman, Dubai, Fujairah, Ras al-Khaimah, Sharjah, and Umm al-Quwain. Abu Dhabi is the capital of the UAE (Morris, 2005). The early economy was agrarian with the addition of pearl diving and fishing as other sources of trade and capital. With the growth of oil production and export, and the leadership of the founding Sheikhs, the country experienced dramatic economic growth that has allowed extraordinary developments in a very short period of time (Shihab, 2001).

To highlight the extent of the country's growth, we note that in 1950 the UAE's population was estimated at 70,000 (United Nations, 2017) with Dubai's population being less than 50,000 people (Gulf Labor Markets and Migration, 2015). Since then, the population of the country has grown enormously with a current population that has exceeded 9.5 million (Worldometers, 2018). Recently, Emiratis have surpassed the 1 million threshold representing approximately 11.5% of the UAE's population, with the largest expatriate nationality being Indian (Global Media Insights, 2018).

Education in the United Arab Emirates

The growth in population has been mirrored by a growth in academic institutions. Historically in the UAE, the evolution of educational institutions went through four different stages which included (1) the Mutawa and the Katateeb, (2) educational circles, (3) semiorganized education, and finally (4) the modern education system (Alhebsi, Pettaway, & Waller, 2015). In 1930, Al Qasimiah School was the first modern education school founded in Sharjah, and by 1962 20 schools were located in the Trucial States. When the Federation was established in 1971, the number of schools had risen to 74 (Godwin, 2006) and free public education was made available for all Emirati children. It was also at this time that the first Minister of Education, Sheikh Sultan bin Mohamed Al Qasimi, was appointed (Thacker & Cuadra, 2014).

The growth in number of public schools was paralleled by a proliferation of private schools to cater for non-Emirati students. The Ministry of Education reports that as of the 2016/2017 academic year, the UAE's population is served by 659 public schools and 567 private ones (Ministry of Education, 2017). While public education is free for Emirati students, many families choose to register their children in private schools. The percentage of national students attending private schools varies by Emirate but has increased significantly in the last decade with an estimate of 57% of Emirati students attending private schools (Thacker & Cuadra, 2014).

As for higher education, the Ministry of Higher Education and Scientific Research was established in 1976. Soon after, the first tertiary institution, the United Arab Emirates University, was established in 1977 in Al Ain. The Higher Colleges of Technology (HCT) was formed in 1988, with separate male and female campuses in each of the seven emirates. The first UAE branch of an international university was founded in Dubai in 1993 by the Australian University of Wollongong (Wilkins, 2010). Zayed University was the third federal institution to open in 1998 with campuses in Dubai and Abu Dhabi. As of 2017 reported data, the UAE has 72 licensed higher education institutions offering nationally and internationally accredited programs (Ministry of Education, 2017).

Need for Quality Assurance

While by global standards the public and private education markets in the UAE are relatively young, they have emerged and developed at such a fast pace that can only be explained within the context of the UAE and its overall evolution and expansion. Needless to say, with rapid growth comes a risk of losing track of quality in deference to the pursuit of quantity (Wilkins, 2010). Also, there is always the potential for issues to arise that increase the need for stronger regulation and quality assurance. For example, the booming economy and the growing expatriate population were a draw for international educational organizations—both P-12 and higher education—that seized the opportunity to extend their influence and increase their profit. Within this context, particular concerns were raised about the quality of international higher education branch campuses and the rigor of both their entrance requirements and grading policies (Wilkins, 2010).

In addition to the rapid growth, there are certainly other issues that have led to the call for quality assurance in the UAE including the influx of international institutions and expatriates, as well as national competitiveness and interest in raising the bar. There is also certainly interest in increasing recognition internationally as an education center (Wilkins, 2010). The World Economic Forum Global Competitiveness Index reflected a fall for the UAE ranking from 12th to 17th place in 2015 and the addition of a new category related to enrollment in higher education impacted that ranking (Warner & Burton, 2017). This has provided an additional impetus for strict quality assurance standards to confirm that international institutions of higher education are providing the same standards of education that they would at home. Another

challenge that has arisen and is likely fueled by rapid growth in the educational enterprise is the increase in false credentials (British Broadcasting Corporation, 2018; Gulf News, 2014) or degrees from unaccredited distance learning programs, which has led to stricter regulation of faculty in higher education and expatriate teachers in P-12 (Ministry of Education).

In light of all the above, educational quality has been a focus of interest in the UAE for the past 20 plus years. In addition, the country's leadership has continuously expressed their wishes for the UAE to make its mark with respect to its educational enterprises and their hopes to accomplish this through the use of quality assurance to create national and global recognition especially of higher education.

Educational Quality Initiatives in the UAE

Although the UAE is a young country in terms of government and formal education, there has been a sense of national urgency with regards to educational quality assurance in response to issues such as those that have been identified in earlier sections. This sense of urgency has prompted plans for numerous initiatives with some never materializing beyond the planning stage and some being short lived, only to be replaced by other initiatives in a cyclical manner. This is not surprising as the quest for educational quality is not a simple one, with research findings consistently indicating that it should be an ongoing and iterative process (Fullan, 2016). However, there needs to be a fine balance between the speed at which change happens and the time needed for the impact of a given initiative to be observed or investigated. Fullan (2000) argues that the "main enemies" of large-scale educational reforms and initiatives are extreme fragmentation and overload. More specifically, DuFour (2004) cautions from the "all-too-familiar cycle" of initial interest in an initiative that is followed by uncertainty about the driving principles, coupled with anticipated implementation difficulties, leading to the abandonment of the initiative as it did not succeed in bringing about the desired outcomes, only to be followed by another new initiative. Academic leaders around the world have witnessed DuFour's cycle in practice even in countries where change is expected to take time.

UAE's Educational initiatives—including those addressing quality assurance in the UAE—have been planned and executed either to target a particular issue, such as the quality of branch campuses of international higher education institutions or to address the larger goal of improving the educational experience and raising international recognition. These initiatives are very similar to those around the world, and in many cases are inspired and/or guided by successful educational projects in other countries. However, they all tend to follow the UAE's dramatic growth and speed of development. As such, initiatives tend to be planned, developed, and implemented in a condensed timeframe thus amplifying DuFour's "all-too-familiar cycle".

In the following section, we will provide examples of such initiatives in a chronological order of date launched—as best as possible while recognizing the overlap—in order to better illustrate the work that has been undertaken to assure quality in edu-

cation in the UAE, as well as to articulate something of a timeline for the efforts. The authors wish to clarify that although salient, these examples are only a small representation of a much larger body of work since is it is not possible to identify them all and do them justice in one chapter. In addition, it is important to highlight that due to the discrepancy in the amount of publicly available information about each initiative, the following sections vary in scope of included overview. Moreover, due to the fast-paced changes and the absence of formal published reports in some instances, news releases by government officials or news items represent the main, if not the sole, information source for some of the initiatives.

1999: Commission for Academic Accreditation

One of the earliest formal—and still active—regulatory educational entities in the UAE is the Commission for Academic Accreditation (CAA) that was established in 1999 with the objective of licensing nonfederal higher education institutions and accrediting study programs in the UAE. The CAA's establishment came as a response to the fast and uncontrolled growth in the number of foreign branch campuses in the UAE with many institutions offering programs of questionable quality. Criteria for ensuring the CAA's licensure (to be renewed every 5 years) require that the institution make available organized for-credit programs that include offerings at the undergraduate level. There should be a focus on research opportunities at the graduate level. In addition to the previous criteria, the following should also be present: (1) transparent governance structures, (2) adequate teaching facilities, (3) appropriate policies and procedures, (4) consistent admission policies, (5) appropriate faculty and class sizes, (6) requisite funding, (7) and internal quality assurance and reporting processes (World Education News and Reviews, 2018). Institutions that do not meet the standards or requirements can be placed on probation for a particular period and under these circumstances the institution is not allowed to accept new students until concerns identified by the CAA are addressed. It is important to note that without CAA licensure, a higher education institution is not able to advertise its programs or enroll students in them. The CAA provides public access to the list of licensed institutions and academic programs on its website.

2005: Abu Dhabi Education Council

With the original objective of managing and administering Abu Dhabi's public schools, Abu Dhabi Education Council (ADEC) was formed in 2005. It was mandated to issue licenses and inspect schools. ADEC's authority soon increased to include private schools as well as higher education in Abu Dhabi. In 2008, ADEC formed a task force consisting of representatives from the three education sectors and government representatives to develop Abu Dhabi's education policy and set its

agenda (ADEK, 2018). In 2009, ADEC implemented the New School Model with the objective of raising the standards and the quality of the curriculum implemented in public schools. The initiative focused on recruiting native English-speaking teachers and administrators to work in the schools in different capacities. In addition, all private schools in Abu Dhabi had to abide by ADEC rules and regulations and were subject to inspection on a yearly basis. Inspection and ensuing reports targeted five performance standards, which are identified as (1) students' achievement, (2) students' personal and social development, (3) teaching and assessment performance, (4) curriculum performance, (5) protection, care, guidance, and support of students, and (6) leadership and management (ADEK, 2018).

More recently (September 2017) and in the ongoing efforts to ensure quality, raise standards, and establish consistency, a presidential decree announced ADEC as a government department and is now named as the Abu Dhabi Department of Education and Knowledge (ADEK) (The National, 2017a, 2017b). The UAE's government efforts for educational centralization include other initiatives that will be presented in the following sections. In the following section, the usage of ADEC versus ADEK will not be interchangeable but will depend on (a) whether the particular reference is to the entity when it was functioning as a council or a department and (b) on the actual acronym used by the resource being cited.

2007: Dubai School Inspection Bureau

As noted in previous sections, to address the tremendous growth in the population of expatriate children living in the UAE, many for-profit P-12 schools were established, especially in Dubai. With the general objective of governing and overseeing these schools and ensuring the quality of the delivered education, the Dubai School Inspection Bureau, housed in The Knowledge and Human Development Authority (KHDA), was established in 2007. As part of its mandate, DSIB has been conducting private schools' annual inspections for the past 10 years. During this period, 1416 inspections have been conducted with a total of more than 137,000 classroom lessons observed (KHDA, 2018). There is also evidence that quality assurance participation in the shape of UAE inspections has contributed to school transformation and performance with regard to the role of professional school environment, as discovered by El Saadi (2017).

The framework for the inspections focuses on six performance standards similar to that of ADEC. Each standard has been further unpacked to identify 17 performance indicators. These standards and indicators drive the inspection process and the overall school evaluations. Although there are six standards in the framework, a study by El Saadi (2017) found that only two of the six UAE Framework indicators examined appeared as predictors of school performance. This work suggests the need for either changes or further clarification of the indicators and performance criteria for the UAE Framework. Results of school inspections also reveal a connection across the characteristics of teacher quality, instructional effectiveness, and education outcomes

for students (Warner & Burton, 2017). This result is confirmed internationally by the work of Hattie (2003).

In the Dubai private schools' inspection framework, schools are categorized based on their annual evaluations. Initially, there were six levels of quality but currently schools are categorized in one of five quality groups: (a) weak, (b) acceptable, (c) good, (d) very good, and (e) outstanding. The latest available data published by KHDA indicates that 66% of students now attend good or better schools and there has been a drop of 10 percentage points in the number of students attending weak schools (Knowledge and Human Development Authority, 2018). It is important to note that the exact condition of the decrease has not been clarified and therefore cannot be reported here. There is a considerable range of quality in the P-12 private schools with better schools appearing to get even better, while struggling schools are caught in a current that pushes back at their attempts to move forward (Thacker & Cuadra, 2014). Many factors are likely at play in this finding but certainly include access to resources (Thacker & Cuadra, 2014). Reports about school quality are published annually and these outcomes impact both tuition charges and future enrollment.

2010: United Arab Emirates Vision 2021

In 2010, H.H. Sheikh Mohammed Bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and ruler of Dubai, launched the UAE National Agenda as a platform to achieve the goals of UAE Vision 2021 (vision2021, 2018). The year 2021 has significance, as it marks the celebration of 50 years since the country was founded in 1971. The foundation for Vision 2021 rests on *four pillars* described as being united in prosperity, knowledge, destiny, and responsibility (Vision 2021, 2018). All four pillars are deeply connected to education improvement. The vision focuses on six national priorities with the aim of raising the UAE's status to one of the greatest countries in the world by the time of the celebration of the Golden Jubilee of the Union. The identified priorities are (1) cohesive society and preserved identity, (2) competitive knowledge economy, (3) world-class health care, (4) first-rate education system, (5) sustainable environment and infrastructure, and (6) a safe public and fair judiciary. As one of the six mentioned national priorities, the importance of education to the UAE's leadership cannot be spelled out more clearly.

The Ministry of Education notes that the focus is on citizenship, entrepreneurship, and on developing an even stronger economy that is driven by innovative efforts, quality research, and science and technology (Warner & Burton, 2017). Moreover, an important goal of the UAE National agenda is to be recognized for providing a world-class education to its citizens. There is also an intention to shift the country's economy to one based on human knowledge rather than one based on oil, as shared by the Education Minister in 2017 (Gulf News, 2017a, 2017b). More specifically, the reform agenda for education 2021 has the goals of (1) improving students' educational experience at all levels, (2) improving quality and professionalism among all educators, (3) ensuring higher standards at the international level, and (4) ensuring

greater accountability in education (Warner & Burton, 2017). There are eight indicators that will be used to evaluate progress toward goals and they include raising the profile of the UAE to be among the top 20 countries in terms of student performance on the Program of International Student Assessment (PISA) and to be listed in the top 15 countries in terms of student performance on Trends in International Mathematics and Science Study or as commonly known as the TIMMS (Warner & Burton, 2017).

2016: Shift to Educational Centralization

As noted earlier, higher education in the UAE was overseen by the Ministry of Higher Education and Scientific Research (MOHESR), with the Ministry of Education (MOE) governing schools in the country. In 2016, MOHESR was folded into the MOE which is now the country's dedicated authority for developing and implementing policies related to educational institutions and educational research (Warner & Burton, 2017). This consolidation was done with the aim of unifying the educational system and centralizing governance, as well as increasing quality and efficiency (Warner & Burton, 2017).

In addition, the previously titled Abu Dhabi Education Council became the Abu Dhabi Education and Knowledge Department (ADEK) while retaining the right to "establish academic institutes and educational bodies in Abu Dhabi, in coordination with MOE and with approval from the Executive Council." (World Education News and Reviews, 2018). In addition, it was noted that the unifying process will take into consideration ADEK's continued offering of math and science in English language (MOE, 2018). Furthermore, and as per information presented on the MOE's website, standardization efforts include Islamic religion, Arabic language, and Social Studies examinations for all grade levels.

It is important to note that while ADEC's transition to ADEK seemed clear cut on the outside, specific details seem to still be ironed out with little publicly available formal data due to the fast-paced change. This is not unheard of or unexpected as similar to any major merge among government entities, and the departments need time to settle into their new responsibilities and jurisdictions. With that in mind, it is expected that with time, there will be more information and clarity about ADEK's role.

2016: Teacher Licensure

The UAE's nation-wide teacher licensure project is another major initiative that focuses on educational centralization. While 2016 is the year the pilot testing and licensing process was launched, the work on the initiative started much earlier when a UAE Cabinet resolution in 2013 authorized the establishment of a Supreme National Steering Committee to oversee the development and implementation of a National

Table 10.1 Overview of TELS UAE standards

Standard 1	Standard 2	Standard 3	Standard 4
1.1 Respect and values	2.1 Demonstrate knowledge of learning, development, and diversity	3.1 Promote positive learning environments	4.1 Carry out reflection
1.2 Personal and professional ethics	2.2 Demonstrate knowledge of curriculum	3.2 Demonstrate learner-centered teaching	4.2 Engage in professional growth
1.3 Accountability	2.3 Demonstrate knowledge of theoretical basis of teaching	3.3 Use assessment for learning	4.3 Determine impact on learner achievement
1.4 Compliance with national and organizational expectations			
1.5 Communication and collaboration			

Licensing System for Teachers. The steering committee was chaired by the National Qualifications Authority (NQA) and included members from the Ministry of Education (MOE), Abu Dhabi Education Council (ADEC/K), Knowledge and Human Development Authority (KHDA), Abu Dhabi Centre for Technical and Vocational Education and Training (ACTVET), and the Institute of Applied Technology. In 2015, the task force completed and approved the Teacher and Educational Leadership Standards for the UAE (TELS UAE) (The National, 2017a, 2017b).

As per the licensing process, candidates need to undergo rigorous evaluation through the use of national assessments on content and pedagogical knowledge as well as the development of a portfolio of evidence. In addition, there are plans for observations of teacher competency. The plan is for a scaled-up implementation with the goal of all teachers actively working in the UAE to be licensed by 2021. There are four standards identified for licensing of UAE teachers, which are as follows:

- Standard 1: Professional and Ethical Conduct
- Standard 2: Professional Knowledge
- Standard 3: Professional Practice, and
- Standard 4: Professional Growth

The elements of each standard, as well as performance criteria and indicators have been identified. Table 10.1 provides a brief view of the elements (only) of each of the four standards to better illustrate the focus of the initiative (Warner & Burton, 2017). In June of 2018, a group of 106 teachers from the first pilot of private school teachers was UAE licensed (Gulf News, 2018). While 106 of the teachers in the pilot group were successful, there were 50 who will need to retake the licensing test.

Keeping in mind the fact that this is still an unfolding project, there is an absence of research informing us of the impact of the licensing process on teachers. However, in light of the quick changes, the scope of the project and its outreach, and the relative absence of clarity with regards to the process, it is understandable that there is a level of resistance and stress among teachers who are expected to go through the licensing process. The Khaleej Times reported that some of the reasons why many teachers are refraining from registering for the exam include (1) they do not feel prepared, (2) facing technical difficulties when trying to register online, (3) not feeling the need to sit for exams with their long teaching experience, and (4) fear of embarrassment if they do not pass the test (Khaleej Times, 2018).

2017: Emirati School Model

The Emirati School Model is another UAE initiative aiming at raising the educational standards and ensuring quality through a centralized education system. As part of this initiative, all public and private schools offering the MOE curriculum across the seven emirates will be following the Emirati School Model (Gulf News, 2017a, 2017b). The model comes as a result of 3 years of discussion and ongoing collaborative efforts between the MOE and ADEC. The academic year 2017–2018 was considered the transition year and 2018–2019 was targeted as the actual unification year.

As per a joint announcement in media outlets in September 2017, with the new Emirati School Model the MOE is in charge of monitoring all schools in the UAE and ensuring their compliance with laws, regulations, and policies, while providing ADEK with updates (Gulf News, 2017a, 2017b). Moreover, ADEK will still have the mandate of assessing public and private school performance while briefing MOE about findings. Since then, there seems to have been a shift in ADEK's mandate to focus solely on private schools in Abu Dhabi, but unfortunately there is no particular official reference to corroborate this. The understanding is based on the general perception that is shared among academics in the UAE based on their individual discussions with official education stakeholders. Nevertheless, it is important to note that at the time this chapter was completed, September 2018, the ADEK website provides a generic and nonexclusive mission, vision, and values while reporting the inspection outcome for private schools for the 2017–2018 academic year. Also, the side buttons for private schools and higher education link website visitors to active pages, while the button for public school development events takes the visitor to a page with the following message "there is no open Events for the time being."

2017: Standardized Testing and University Admissions

Students following the UAE's national curriculum usually sit for unified examinations in Grade 12 as part of their graduation requirements (Farah & Ridge, 2009).

Since 2017, extra measure to raise standards was introduced by the MOE, namely, the Emirates Standardized Test (EmSAT) which is used as part of the prerequisite conditions for admission to federally funded universities (World Education News and Reviews, 2018). Subject matter areas included in the EmSAT are Mathematics, Physics, English, and Arabic. For advanced track students, Chemistry is another subject matter area that they need to sit for. Prior to the EmSAT, scores on the Common Educational Proficiency Assessment (CEPA) were used as selection criteria for admitting students into university.

Qualifications, Attestation, and Equalization

While there is no official launch date, the UAE is dedicating considerable efforts and funds to ensure the veracity of the qualifications of all educators in the system, both P-12 and higher education. These efforts come in response to some major cases of degree fraud that have been revealed in the UAE and the region (Gulf News, 2015). The Ministry of Education has previously required the attestation of a faculty member or teacher's degrees through the provision of an official copy of the degree stamped by the seal of the granting university, followed by authentication from the UAE's embassy in the country of the granting university, and then by the Ministry of Foreign Affairs in the UAE.

More recently, the MOE is requesting another separate form of authentication, namely, the formal equalization of the granted degree(s). Degree equalization is particularly concerned with ensuring that the earned degree is indeed comparable with accredited degrees in the UAE. Both processes are needed for all educators who receive degrees outside the federal UAE institutions (United Arab Emirates Ministry of Education, 2015). The process for equalization, which is managed by the MOE, is rigorous and is designed to ensure that all who are serving as educators are operating with the appropriate qualifications. The process is extremely rigorous and aims at addressing degree fraud as well as filtering out degrees earned through distance and online learning programs which are still not accepted as credible degrees in the region. As such, part of the degree equalization process includes a review of the degree holder's passport to ensure residency in the country of the degree-granting institution for their studies, as well as obtaining permission from applicants to directly contact institutions for confirmation of study and degree completion in the area identified.

Conclusion and Future Considerations

Views that quality assurance measures can be invasive and time-consuming illustrate the need for the establishment of trust between institutional and governmental leadership (El Khawas, 2007). Some researchers have said that accountability policies have generated few benefits while making unproductive and burdensome requests

of institutions (McNay, 1995). Of course, there are always many different paths that can be taken on any journey toward growth and improvement. Some would argue for a more top-down approach while others argue that quality should be a bottom-up effort and that everyone should be engaged in efforts to consider what is quality and what it looks like in teaching, programs, and institutions. That being said, the concept and goals of accountability have reached beyond business and into government and all levels of education. With our instant access to information, rapid technological advances, and global competition, it is unlikely that the role and reach of quality assurance will diminish.

Considering how young the UAE is as a country, the government and all stakeholders are to be commended on what has been achieved so far. Still, for the UAE to achieve its goals by 2021, there is yet much that needs to be accomplished and quality assurance will certainly play a role in the successful achievement of the 2021 vision and other initiatives. The authors of this chapter have attempted to offer an overview of the current state of affairs with educational quality assurance in the UAE. The task of building a quality assurance system for education was not an easy one for multiple reasons, the most important of which is the volume of what has been done in the short time frame since the establishment of the UAE's Federation. In true UAE spirit, the story of educational quality assurance is a fast paced and ambitious one, where clearly, Bill Waterson's Kelvin and Hobbes quote "it is funny how day-by-day, nothing changes. But, when you look back, everything is different" does NOT apply. Similar to everything in this young aspiring and flourishing country, everything changes on a daily basis, and if it was not for that fast pace, the country would not have been able to achieve so much in so little time. As such, the chapter provides a brief overview of some of the most relevant initiatives while noting that many are still underway and might have evolved further in the coming short time.

Needless to say, with major achievements come major challenges and obstacles with time being the most valuable commodity. While in the corporate sector, time is of the essence when completing a project, racing with time in educational contexts tends to be a double-edged sword. In education, the project itself is dealing with human beings and the deliverable is the future informed citizen. As such, measuring the final outcome of the project is not as clear cut as in the corporate sector, and quality assurance becomes more elusive. With this in mind, the pace at which the initiatives presented in this chapter was planned, developed, and implemented may represent the weakest aspect when reviewed from an overall change-management and educational reform perspective, and yet that same pace is the biggest achievement that the UAE takes pride in. While it is not clear what initiatives will follow in the near future, one thing is certain. The UAE's leadership is committed to education and to the path of developing it further to reach global recognition and standards. This book offers an overview of the evolution of education in the UAE, but definitely not the final destination.

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